

BBC ACORN

USER

GAMES LATEST:

News and reviews
for Christmas

ROLL THE DICE:

Random numbers
for maps and mazes

IN CAMERA:

Advice on taking
screen shots

WORDPROCESSING:

Two utility ROMs
for easy printing

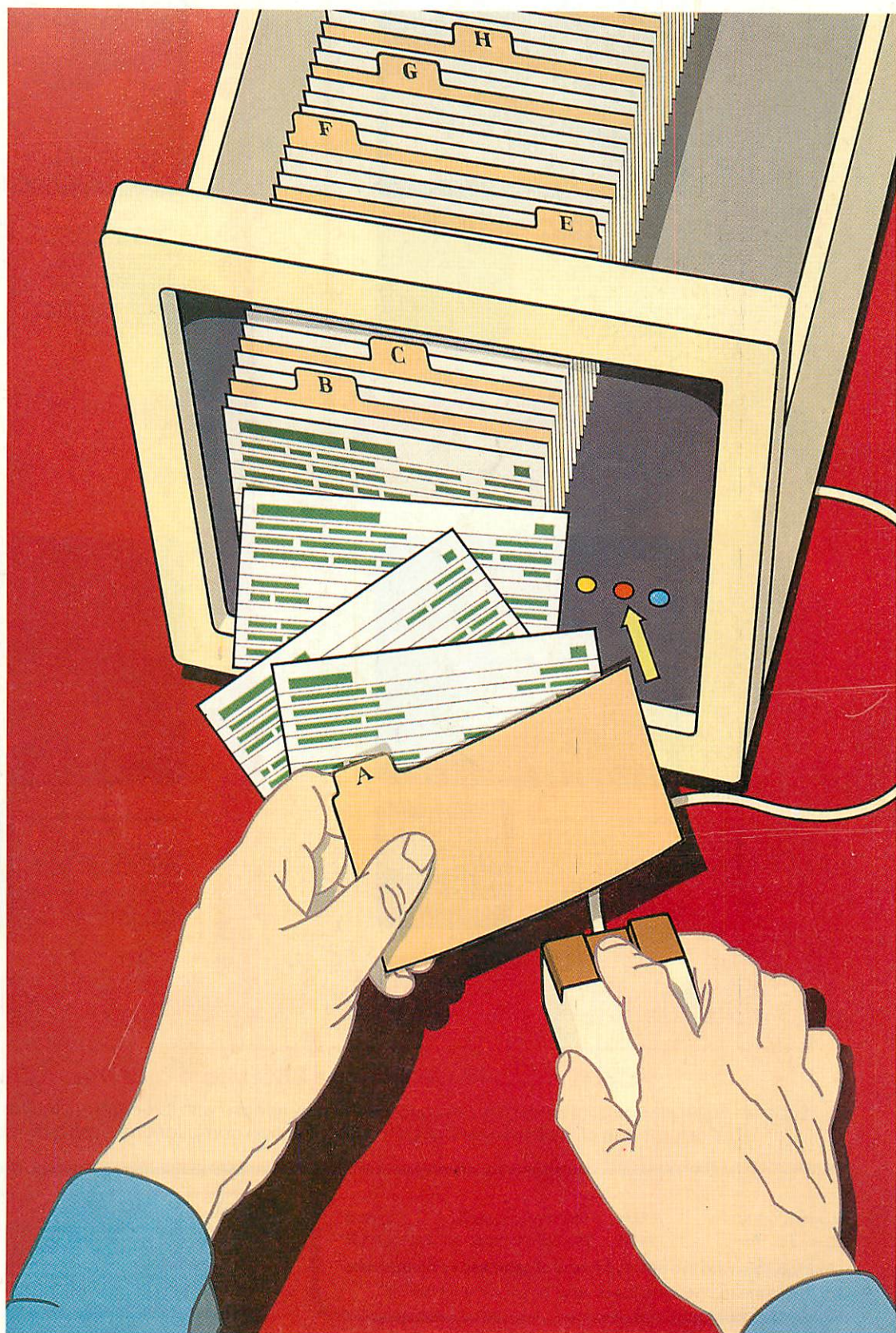
ARC DIGITISER:

Paint by numbers
with Watford

USER CARD

Easy database for
BBC micros

COMPATIBILITY:
Free chart inside



PLAY IT AGAIN SAM

6

NEW
RELEASE



GALA FORCE 2 A New Release from Superior Software

Everything that Galaforce was, and more – more aliens, more patterns, much more speed, more features (including collectable capsules – some help, some hinder), excellent sound effects and music.
"A wonderful shoot 'em up – fast, furious, beautifully designed and stunningly compulsive. This will be one of the top three BBC Games of the year – I promise" ... A & B Computing (September 1988)



NOW ALSO
AVAILABLE
FOR THE
ELECTRON



HUNCHBACK Superior's Authentic Arcade Conversion

This superbly addictive and amusing arcade conversion is now available again for the BBC Micro and is available for the first time ever for the Electron.
"This game has excellent graphics and sound ... a good addiction factor and is fun into the bargain" ... Micro User



SUPERIOR
APPROVED

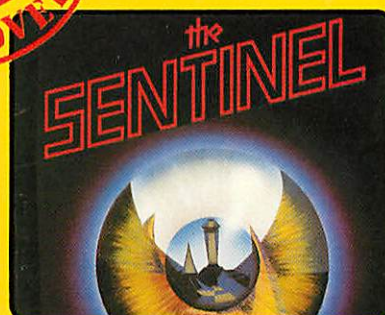


HOPPER Acornsoft's Classic Hit

The best implementation of the "Frogger" game. Even better than Superior's own version! Fast-moving with detailed, colourful graphics. Features include diving turtles, crocodiles, snakes and dragonflies. "It's great fun ... an excellent version of the arcade favourite. Highly recommended" ... Micro User



SUPERIOR
APPROVED



THE SENTINEL Firebird's Revolutionary Game

Absorb your way through 10,000 different 3D landscapes. Gain height by absorbing the trees and the sentries, and finally defeat The Sentinel.
"The Sentinel is the best BBC Micro game ever. An entirely new concept. The graphics are amazing. Buy it!" ... Acorn User



PLAY IT AGAIN SAM 6 for the BBC Micro and Acorn Electron

Superior Software has combined a top-quality brand-new release with three great classics (one new to the Electron). The result is one of the best ever four-game BBC/Electron compilations. Don't miss it for your collection!

BBC Micro Cassette£9.95 Acorn Electron Cassette.....£9.95
BBC Micro 5 1/4" Disc£11.95 BBC Master Compact 3 1/2" Disc.....£14.95

(Compatible with the BBC B, B+ and Master Series computers)

Please make cheques payable to "Superior Software Ltd".

ACORN ELECTRON VERSION

Unfortunately it is not technically possible to produce an Acorn Electron version of THE SENTINEL. The four games on the Acorn Electron version of PLAY IT AGAIN SAM 6 are:

GALA FORCE 2, HUNCHBACK, HOPPER and VIDEO'S REVENGE.
VIDEO'S REVENGE – An action-packed, fast-moving alien blaster from Budgie Software. "If you can imagine Defender twisted on its side with the mentality of Rambo in a bad mood, then you are getting close to the destruction possible in Video's Revenge. Sprites are fast and furious ... sound is wonderful!" ... Micro User.

OUR GUARANTEE

- All mail orders are despatched within 24 hours by first-class post.
- Postage and packing is free.
- Faulty cassettes and discs will be replaced immediately. (This does not affect your statutory rights).

**SUPERIOR
SOFTWARE**
Limited

ACORNSOFT

(Acornsoft is a registered trademark of Acorn Computers Ltd. Superior Software Ltd is a registered user.)
Dept 6PS1, Regent House, Skinner Lane, Leeds LS7 1AX. Telephone:(0532) 459453

The screen pictures
show the BBC Micro
versions of the games.



24 HOUR TELEPHONE
ANSWERING SERVICE FOR ORDERS

★ ★ ★
AMAZING

SOFTWARE
Bargains

★ ★ ★
OFFERS!

ELECTRON SPECIALS

ELECTRON COMPUTERS..... £59.95
(includes power supply, aerial lead and 90 day warranty)
PLUS ONE INTERFACE £49.95

PACKAGE ONE

PLUS 1, VIEW & VIEWSHEET £69.95

PACKAGE TWO

ELECTRON COMPUTER, PLUS 1 + VIEW only £109.95

PACKAGE THREE

VIEW + VIEWSHEET ROMS £21.95

PACKAGE FOUR

LOGO, VIEW, VIEWSHEET for £49.95
And get Lisp ROM **FREE**

PACKAGE FIVE

PLUS 1, VOLTMAE 3B TWIN JOYSTICKS with VIEW or VIEWSHEET £79.95

PACKAGE SIX

PLUS 1, LOGO, VIEW +, VIEWSHEET .. £109.95
+ get Lisp ROM **FREE**

JOYSTICKS at LOW PRICES

ELECTRON JOYSTICK INTERFACE & SOFTWARE £14.95

QUICKSHOT II TURBO JOYSTICK £13.95

BUY BOTH £24.95!

VOLTMAE DELTA 3B TWINS £24.95 £16.95
For use with Plus 1 or BBC

VOLTMAE 14B HANDSET £15.95
INTERFACE FOR 14B £14.95
BUY BOTH £27.95!

VOLTMAE 31b SINGLE £13.95
VOLTMAE DELTA 35 £12.95
(for Master Compact)

COMPETITION RRO £22.45 £19.95

ELITE ZIPSTICK £15.95 £10.95

ARCHIMEDES!!

| | RRP | OFFER |
|----------------------------|---------|---------|
| 1st Words Plus D | £91.94 | £84.95 |
| Alerion | £14.95 | £12.95 |
| Alpha Base | £49.95 | £44.95 |
| Ansi C | £113.85 | £99.95 |
| Arch Duet Cover | £14.95 | £12.95 |
| Artist | £19.95 | £17.95 |
| Artisan Support Disk | £19.95 | £17.95 |
| Artisan | £39.95 | £34.95 |
| Autosketch | £90.95 | £79.95 |
| Corruption NEW! | £24.95 | £19.95 |
| Creations disk | £19.95 | £15.95 |
| Conqueror | £24.95 | £19.95 |
| Delabase | £29.95 | £25.95 |
| Desk Top Enhancer | £29.95 | £24.95 |
| Fireball NEW! | £19.95 | £17.95 |
| Flying Start 2 | £99.95 | £89.95 |
| Fortran 77 | £113.85 | £99.95 |
| Freddy's Folly NEW! | £14.95 | £11.95 |
| Gama Plot | £69.95 | £59.95 |
| Graphic Writer | £113.85 | £99.95 |
| Hoverbowl | £14.95 | £11.95 |
| Interchart | £28.75 | £24.95 |
| Intersheet | £44.85 | £39.95 |
| Interword | £44.85 | £39.95 |
| ISO Pascal | £113.85 | £99.95 |
| Kermit | £56.35 | £49.95 |
| Lisp | £228.85 | £19.95 |
| Logistix | £113.85 | £99.95 |
| Minotaur | £14.95 | £11.95 |
| Missile Control | £14.95 | £11.95 |
| Nominal Ledger | £64.95 | £54.95 |
| Order Processing Invoicing | £64.95 | £54.95 |
| Orion NEW!! | £14.95 | £11.95 |
| PC Emulator | £113.85 | £113.85 |
| Personal Accountant | £279.99 | £249.95 |
| Pipedream | £113.85 | £99.95 |
| Presentor | £28.69 | £24.95 |
| Prolog | £228.85 | £21.95 |
| Purchase Ledger | £64.95 | £54.95 |
| Sales Ledger | £64.95 | £54.95 |
| Sigma Sheet | £69.95 | £59.95 |
| Sound Synth | £49.95 | £44.95 |
| Spellmaster | £58.99 | £49.95 |
| Stock Management | £64.95 | £54.95 |
| System Delta Plus | £69.95 | £59.95 |
| Terramex | £19.95 | £17.95 |
| Toolkit Module | £39.95 | £34.95 |
| Twin | £33.35 | £29.95 |
| U-Connect | £59.95 | £49.95 |
| View 3 | £59.80 | £49.95 |
| Wordwise - | £23.00 | £19.95 |
| Zarch | £19.95 | £17.95 |

WORD PROCESSORS

| TITLE | F | RRP | SALE |
|---------------------|---|-------|-------|
| HiView | D | 59.80 | 49.95 |
| Inter-Word | R | 56.35 | 49.95 |
| Mega 3 | R | 97.75 | 84.95 |
| Overview | D | 98.90 | 79.45 |
| Printer D Generator | D | 11.50 | 9.50 |
| Printmaster (Epson) | R | 33.35 | 28.95 |
| Spellmaster | R | 59.00 | 49.95 |
| View 3.0 | R | 50.80 | 44.95 |
| View: DabhandGuide | D | 7.95 | 6.95 |
| View Index | D | 14.95 | 11.50 |
| View Professional | D | 99.95 | 79.45 |
| Viewspell | R | 39.95 | 31.95 |
| Wordwise | R | 45.42 | 35.95 |
| Wordwise+ | R | 58.35 | 45.95 |

SPREADSHEETS

| TITLE | F | RRP | SALE |
|-------------|---|-------|-------|
| Inter-Sheet | R | 56.35 | 49.95 |
| Ultracalc 2 | R | 29.95 | 24.95 |
| Viewsheet | R | 59.80 | 49.95 |

DESKTOP PUBLISHING

| TITLE | F | RRP | SALE |
|---|-----|-------|-------|
| Admin Extra (40T) | D | 14.95 | 11.95 |
| Admin Extra (80T) | D | 14.95 | 11.95 |
| Fleet St Editor (40T) | D | 39.95 | 29.95 |
| Fleet St Editor (80T) | D | 39.95 | 29.95 |
| Fonts & Graphics 4 | D | 14.95 | 11.95 |
| Fonts & Graphics 8 | D | 14.95 | 11.95 |
| Stop Press (Mas) | D+R | 49.95 | 41.95 |
| Stop Press (B/B+) | D+R | 49.95 | 41.95 |
| Walt Disney (40T) | D | 14.95 | 11.95 |
| Walt Disney (80T) | D | 14.95 | 11.95 |
| Mouse & Stop Press (State B/B+ or Master) | D+R | 79.99 | 69.95 |
| Mouse & Superart (State B/B+ or Master) | D+R | 79.95 | 69.95 |
| Mouse Only | | 38.75 | 34.95 |

BISMARCK

Death of a battleship
Requires the highest qualities of judgement, observation & strategy.

BBC DISC

~~£14.95~~ **£12.95**

A VOUS LA FRANCE?

A complete introductory package for French language learning. Includes 45 computer programs.

BBC CASS or DISC

~~£24.95~~ **£21.95**

INTEGRATED OFFICE SUITE

| TITLE | F | RRP | SALE |
|---------------------|---|-------|-------|
| Mini Office | C | 5.95 | 4.75 |
| Mini Office 11 | C | 14.95 | 11.95 |
| Mini Office 11 | C | 59.95 | 54.95 |
| Mini Office 11 40t | D | 16.95 | 13.95 |
| Mini Office 11 80t | D | 16.95 | 13.95 |
| Mini Office 11 M40t | D | 19.95 | 15.95 |
| Mini Office 11 M80t | D | 19.95 | 15.95 |

SUPERIOR DEAL!

| | |
|---------------|-------------|
| Death Star | Repton 2 |
| * Mr. Wz | Repton 3 |
| * Chess | * Draughts |
| * Tempest | * Overdrive |
| Fruit Machine | * Stranded |
| * Eie Only | * Invaders |

Any 5 for £9.95 Cass only

MITSUBISHI

DISC DRIVE

400K, DD, 40/80t & 2 yr warranty

ONLY £139.95!

MICROPOWER AND OTHER GAMES

| ELECTRON | RRP | BBC | RRP |
|-----------------------------|-------|----------------------|-------|
| Groscopic | £4.95 | Groscopic | £2.95 |
| Bandits at 3 O'Clock | £4.95 | European Knowledge | £4.95 |
| Escape From Moon Base Alpha | £4.95 | World Geography | £4.95 |
| Obolus | £4.95 | Killer Gorilla | £4.95 |
| Stock Car | £4.95 | Bandits At 3 O'Clock | £4.95 |
| Killer Gorilla | £4.95 | Stock Car | £4.95 |
| Rubble Trouble | £4.95 | Cybertron Mission | £4.95 |
| Swedoo | £4.95 | Position | £4.95 |
| Croaker | £4.95 | Far Man Sam | £4.95 |
| Bumble Bee | £4.95 | Star Drifter | £4.95 |
| Platoon | £4.95 | Microcosm | £4.95 |
| Felix & The Fruit Monsters | £4.95 | Wizard's challenge | £4.95 |
| Cybertron Mission | £4.95 | | |
| Moondraider | £4.95 | | |
| Felix And The Evil Weevils | £4.95 | | |
| Francy | £4.95 | | |

ANY FIVE FOR ONLY £7.95! (Cass only)

EDUCATION SPECIALS

| | |
|---------------------|-----------|
| Unkown Spanish | ANY 2 FOR |
| Unkown Italian | £3.95! |
| Maths 10 Level 1 | |
| Maths 10 Level 2 | |
| String | |
| English | |
| World Geography | |
| BBC only | |
| Esperanto Knowledge | CASS ONLY |
| Graphs & Charts | |
| Business Games | |
| Task Back | |
| Workbooks | |

ACORN SOFTWARE SPECIALS

| | |
|---------------------|-----------|
| Crime & Detection | ANY 5 FOR |
| Music Quiz | £7.95! |
| Theatre Quiz | |
| Sci-Fi Quiz | |
| Jeopardy Game | |
| Royal Quiz | |
| Spelling Adventure | |
| Crazy Tracer | |
| Castle of Riddles | |
| Stations of Command | |

EDUCATION

EDUCATIONAL COMPENDIUM (3-10 YRS)

WORKSHOP SPOOKY MANOR CASS OR DISK

ABC TALKBACK £11.95

BEST FOUR LANGUAGE BEST FOUR MATHS (7-11 YRS)

BBCDISC COMPACT £17.95 ea £18.35ea

MATHS WITH A STORY 1 & 2
PICTURE CRAFT 16 1/2 YRS
ANSWERBACK JUNIOR QUIZ
ANSWERBACK SENIOR QUIZ
HAPPY WRITING
HAPPY NUMBERS

| BBC or ELE CASS | DISC |
|-----------------|--------|
| £9.95 | £10.95 |
| £7.95 | £8.95 |
| £7.95 | £8.95 |
| | £8.75 |

MICRO POWER GAMES

| | |
|----------------------|----------------------|
| Ghouls | Frenzy |
| Cybertron Mission | Rubble Trouble |
| Mr Ee! | Stock Car |
| Jet Power Jack | The Mine |
| Blockbuster | Dune Rider |
| Felix & Evil Weevils | Swag |
| Felix Fact | Plutonium Plunder |
| Killer Gorilla | Bandits at 3 O'clock |

£2.95 each or **ANY 5 FOR £11.95**

LOOK!

ELECTRON POWER SUPPLIES only £9.95

MICRO POWERS

CASTLE QUEST

BBC CASS DISC £5.95 £7.95

LOGO

For the Master 128 or Ele Plus 1

ONLY £24.95!

LISP Rom (Ele) £9.95
LISP Cass (Ele) £2.95

BBC IMOGEN

DISC CASS £7.95 £6.95

MAGIC MUSHROOMS

with free badge, (Ele Cass) **£2.25!**

- * Please add 95p P&P (overseas £4.50)
- * All prices include VAT
- * Goods despatched within 48 hours - Subject to availability
- * Out of hours answerphone: 0532 687735

SOFTWARE

Bargains

Dept AU1 8/8a Regent Street, Chapel

Allerton, Leeds LS7 4PE.

Tel: 0532 687735, 0532 687789

We can offer attractive discounts for all educational establishments, phone or write for a quote.

We supply a catalogue of our entire stock range per machine type with every order.

PIPEDREAM

POWER AT YOUR FINGERTIPS

With Archimedes, you have a breakthrough in personal computing power. Enough power for the next breakthrough in integrated software — PipeDream.

With existing integrated packages, you have to divide your work into artificial sections, such as text, numbers and calculation, and database.



With PipeDream, you compose your work in the order you want to print it, with text and numbers all together in one document. Incorporate calculations directly into paragraphs of text and formatted paragraphs directly into spreadsheets.

With this new approach you get a whole new dimension of power . . .

PipeDream is a word processor offering many columns of formatted text. That film script you were going to write next holiday? Ideal.

PipeDream is a spreadsheet program with a work area of 500,000,000 columns by over 500,000,000 rows, so you'll grow out of your computer before you grow out of PipeDream.

And being able to mix numbers and text together means you can calculate invoices and mail-shot them without resorting to expensive accounting software.

In fact, PipeDream's unique integration means that mail-shots couldn't be easier.

Simply type in your letter or invoice, leaving gaps for names, addresses and payment dates. Then PipeDream will print the letter to each addressee, automatically inserting all the details, and keeping the text neatly formatted and aligned.

And database and spreadsheet functions can work together.

You can use PipeDream as a database program to maintain your address book or sales ledger. Perform selections and sorts to invoice all of those customers living in London who have bought more than 100 products from you since February but haven't paid within 30 days.

The price of all this power? Just £99 + VAT.

But don't just take our word for it. This is what Michael Bywater of *Punch* had to say:

"PipeDream itself is a remarkable achievement. It offers a spreadsheet, a word processor and a database, and if you think I am talking about a conventional integrated program, you are wrong. PipeDream does all those things within one program. No switching between modules or cutting and pasting; PipeDream simply offers you a matrix of 'slots' into which you can either type continuous text or figures or formulae or database 'fields'."

That was PipeDream on the Z88.

Now we've completely rewritten it for Archimedes. The result is even friendlier, faster and more powerful. There are full menus and dialogue boxes, making the most complex operations easy to carry out. You'll probably never even need to look at the comprehensive PipeDream tutorial and reference book. And keyboard wizards will love the optimised keystroke alternatives to the menus. Some will even devise their own key layouts, using PipeDream's unique keyboard programmability.

We've maintained 100% file and keystroke compatibility with Z88 PipeDream, so you can transfer files between the Z88 and your Archimedes.

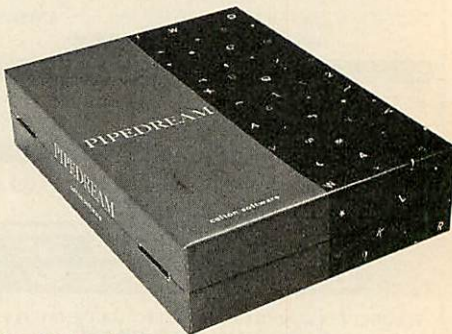
PipeDream is also 100% file compatible with PipeDream on the IBM PC, and Acornsoft's VIEW PROFESSIONAL for the BBC Microcomputer, so you could work at home on your BBC Microcomputer and take your files to the office on your Z88, to use on your Archimedes or IBM PC. No other software enables you to share your files with all these computers.

New facilities include:

- user-definable colour displays
- a comprehensive range of financial functions
- full usage of foreign characters including direct editing and printing
- loading and saving in several formats giving compatibility with Lotus 1-2-3
- linking files enabling you to pass the results of calculations between spreadsheets.

This in addition to all the facilities many thousands of Z88 PipeDream users have come to expect:

- fully wysiwyg display (what you see is what you get)
- many columns of formatted text on screen
- full spreadsheet power includes dates
- live calculations within formatted text
- flexible printing of special highlights such as underlining and bold text
- documents consisting of many separate files.



POWER AT YOUR FINGERTIPS

colton
software

For more information or to order PipeDream cut out the coupon or phone us on 0954 211472

In most cases orders will be despatched the same day, but please allow 28 days for delivery.

Please send me more information on PipeDream ☐

Please send me _____ PipeDream packs

| | | |
|------------------|--------|----------------|
| Retail price | £99.00 | £ _____ |
| VAT | £14.85 | £ _____ |
| Postage UK | Free | |
| Postage overseas | £10.00 | £ _____ |
| TOTAL | | £ _____ |

Please tick box. Acorn Archimedes 3 1/2" disk ☐ MS-DOS 5 1/4" disk ☐ MS-DOS 3 1/2" disk ☐

Payment ☒ Visa ☐ Access ☐ Cheque ☐

Credit card number

Credit card expiry date _____

Name (as on credit card) _____

Address _____

Postcode _____

Send to Colton Software, Broadway House, 149-151 St. Neots Road, Hardwick, Cambridge CB3 7QJ AU/1/89

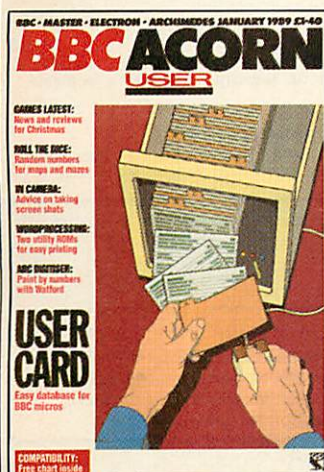
PipeDream is a trademark of Colton Software Limited. Archimedes is a trademark of Acorn Computers Limited. IBM and PC are trademarks of International Business Machines Corporation. MS-DOS is a trademark of Microsoft. Lotus 1-2-3 is a trademark of Lotus Development Corporation. Z88 is a trademark of Cambridge Computer Limited.

BBC ACORN USER

ISSUE NO 78

JANUARY 1989

COVER



COVER FEATURE

Push-button database for BBC micros, pages 66-71
Cover by Robin MacFarlan

EDITORIAL

It's likely that very soon we'll all be using the word 'connectivity'. It conjures up images of computer hardware and software working together and sharing information easily.

Today's world demands connectivity — machines linking up, and even running the same software. IBM PCs can already connect to Econet via Acorn's Ecolink card. Macintoshes will link soon, and gain a User Port too. BBC Basic now runs on Nimbus, PC and Mac; soon it will go onto the Amiga. *First Word Plus* and *Timeworks* will link PC, Atari and Arc; *Pipedream* comes in PC, Z88, Arc and Beeb flavours.

Acorn's machines are well endowed with ports, and it has vast experience with over 6000 installed networks. As more people buy Arcs, more software will migrate from the PC and ST world. At the beginning of its second decade, Acorn could be well placed to exploit a need for connectivity.

NEWS

BBC ACORN USER 7
More Masters in demand, Uniplex software for UNIX

COMMS COLUMN 11

CUSTOMER HOTLINE 12

EDUCATION NEWS 15

PREVIEW 23

Wordpower, budget Arc drawing packages, *Technology and Design 2*, *Colour Screenprint*

NOTICEBOARD 24

READER SERVICE 24

COMPETITION RESULTS 24

BLUNDERBOX 24

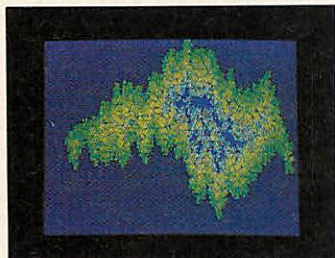
FEATURES

USER CARD DATABASE 66
Joe Telford shows how you can use concepts from Apple's *Hypercard* visual database

ARC GKS GRAPHICS 73
Guy Martin and Gary Phillips introduce 'segments' to the GKS standard library

SHOOTING GALLERY 81
Taking good photos of computer screens is easier than you think, says Graham Bell

THE MYSTERY OF MAPS 85



Random numbers can create an almost infinite number of maps, landscapes and mazes with Peter Voke's programs

ADVENTUROUS TEACHING 89
Infants can be motivated by simple adventures

FREE POSTER

Rob MacMillan shows you how data can be transferred between different wordprocessors, spreadsheets and databases. Get them all talking to each other, using this handy reference guide. The *View* family, *Wordwise* and the *Inter* series are all covered in our great pull-out poster

REVIEWS

GAMES PAGE 125



Sam Greenhill presents his favourite five games of 1988, plus a trio of Arc entertainments

GAMES REVIEWS 129
Minerva's *Freddy's Folly*, *Clogger* from Impact, Mandarin's *Lancelot* and Rainbird's game of the year, *Corruption*, all under the spotlight

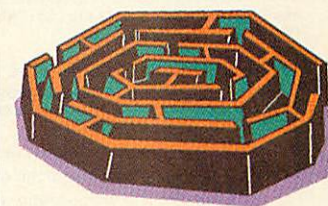
COMING TOGETHER 131
Games compilations: are they good value for money? Three recent packages reviewed

PIN POWER 133
Is this the best-value 24-pin printer yet? Panasonic's KX-P1124

CAPTURED 137
Rob Wilmott sees how the Watford Arc digitiser captures live pictures from video, even in colour

DRIVEN CRAZY

142



Robert Elwell assesses two ROMs that can make it easier to escape from the printer maze with *View*

EDUCATION

NEWS 15
Commodore Amiga to emulate BBC micro

INFANT ADVENTURERS 89
Chris Drage and Nick Evans discuss using adventure games with young schoolchildren.

REGULARS

HINTS & TIPS 41
David Atherton shows how to edit Basic programs in *InterWord*, and keep *Wordwise Plus* backups.

ARC AGORA 47
Untangling sound on the Arc and generating your own voices, explained by David Acton

BUSINESS 145
Roger Carus surveys some of your ways of making use of the BBC micro

YELLOW PAGES 97

LETTERS 147

FREE ADS 150

ADVERTISERS' INDEX 151

ACORN ABUSER'S DIARY 152

NEXT MONTH

Connect your micro to other machines, meet Tony Benn and his seven BBC micros, take a look at new printer technologies: all in *BBC Acorn User's* February issue — published 12 January



Editor Graham Bell. Technical Editor Robert Miller. Editorial Secretary Christina Neal. Sub-Editor Pauline McLernon. Production Assistant Teri North. Art Director Ian Finlay. Art Editor Liz Thompson. Assistant Art Editor Paul Holmes. Ad Sales Controller Seamus Geoghegan. Sales Executive Richard Power. Ad Production David Noakes. Publishing Services Manager Sarah Bullard. Merchandising Manager Seran Anderson Haddick. Group Editor Tony Quinn. Editorial Manager Ellen Brush.

Published by Redwood Publishing, 20-26 Brunswick Place, London N1 6DJ. Tel: 01-490 1444. Telecom Gold 81: RED001. Micronet 919992492. Printed by Riverside Press, Gillingham. Typeset by Irian Communications Group, Harlow. Colour by Trumps Studio, Ware, Herts. Print production by Aquarius Print and Design, London. Distributed by BBC Magazines, 31 Marylebone High Street, London W1. ©Redwood Publishing 1988. All rights reserved. Acorn is a registered trademark of Acorn Computers Ltd. Redwood Publishing is a registered data user. ISSN 0263 7456

ABC

Advanced Computer Products

range of software products

£34.50

£34.50

- ★ Pull down windows operate throughout
- ★ Users can create their own windows

PRES price £29 ex VAT, £33.35 inc.

£24.15

An internal battery-backed RAM upgrade for the Advanced Plus 1, 24.65 line VWO pages of Sideways RAM, battery-backed and featuring full write protect facility. Just like ABR but fitted internally & vacating a cartridge slot. This product is compatible with all Acorn BBC/Master & Electron computers.

£13.00 excl VAT: £14.95 inc VAT

£28.75

£34.50

3 versions ADM/C(11) - ADB(12) ADE (13) £34.50
 ACP have totally re-written the Acorn 1770 DFS, enhancing existing features & adding new ones. The result is a very fast and powerful disc filing system with the ability to operate in double density occupying both sides of a disc (640K).
 Automatic file relocation, improved file handling, 62 file catalogue and Sways RAM can be used as a fast RAM DISC. (16K EPROM + comprehensive manual)

PRINTER . . . Panasonic KX-P 1081 Graphic Epson Compatible NLQ ready to connect including capable, delivery and VAT £155.65 ex VAT £179.00 inc VAT Ribbon £5.50 + VAT

DISC DRIVES

| | |
|---------------|--------------|
| Ex VAT | + VAT |
|---------------|--------------|

| | | |
|---|-------------|---------|
| Cumana 5.25 dbl/sided 40/80 track, switchable, inc psu..... | £129.56 | £149.00 |
| Cumana 5.25 single/sided 40 track, inc psu | £112.17 | £129.00 |
| Cumana 3.5 dbl/sided 80 track, inc psu | £112.17 | £129.00 |
| PRES special 3.5 single/sided 80 track, inc psu | only £59.00 | £67.85 |

M/B/E/C

The ultimate 'front-end' for ADFS and DFS includes:

Screen picture shows AFM in Copy mode on Master Turbo

AFM follows the PRES 'Master Plan' of upwards compatibility – it runs on Electron, BBC B, B+, B+128, Master 128 and Compact, with Second/Co-processors and Acorn-compatible versions of DFS & ADFS.

MENU — allows browsing through the files and directories on a disc. Files are started from a menu of up to 7 options chosen for a selected ROM. Loaders are provided for Basic, The Basic Editor, View, ViewSheet, ViewStore, ViewSpell, Edit, Wordwise (+) and InterWord. This list can be expanded infinitely using an Acorn-approved OSWORD call... full details and example in the manual.

DELETE—allows files to be marked and then deleted with one keystroke. **RENAME**—allows one or more files to be marked and then renamed using a wildcard name, ie one which varies with each file renamed. Thus you could rename s1, s2 and s3 to be s1_old, s2_old, and s3 old in one operation. . . and that's only the beginning! As well as using the whole of the original name you can also pick out individual characters to form part of the new name.

COPY – the strongest feature of AFM. It is a two stage copy routine. With both source and target directories shown on screen the files to be copied are marked. Once all the files have been marked copying is started and the computer can be left to get on with it!

Large files can be split across several disks, and recombined.

As much as possible of the computer's memory is used for copying files, including unused parts of shadow screen memory, sideways ram banks (inc. AP7), ram cartridges (inc. ABR (32K) and AQR (256K)), tube memory (up to 61K), B+ paged ram (12K) and unused parts of the Slogger Master Ramboard (Electron).

Comprehensive error trapping and recovery is provided, so a copying run will rarely have to be aborted unfinished! And there's much, much more.

THE ADVANCED PLUS 3

Now you can turn your Electron & +1 into a full disc system - no more waiting for tape loading or 'bad block' data? messages. A.P. 3. gives you...

1. A fully Acorn compatible 1770 interface
2. 80 track 3.5 disc drive, as used by Acorn (320K capacity)
3. Separate PSU
4. Acorn ADFS
5. Welcome disc
6. Utilities
7. Full documentation
8. All the advantages of the original Plus 3 PLUS extra ROM socket.

All this without dramatically increasing the required desk space! Now well into the SECOND THOUSAND production.

Remember - 2nd drives (3.5 or 5.25) can be added and the AP3 drive can be used on a BBC or Master computer! Also most Electron disc-based software is supplied on 3.5 ADFS discs.

The only fully compatible disc upgrade running Acorn's own preferred filing system (supplied on: Plus 3, Master 128, Master Compact and now the Archimedes)

EXTRA BONUS

3 games on disc - SNAPPER - DRAUGHTS - REVERS!

COMPLETE PACKAGE ONLY
£99.00 excl VAT; £113.85 inc VAT

ADVANCED PLUS 1... The plus 1 is the main expansion for the Electron. It provides the Centronics parallel printer, printer port, joystick interface and 2 cartridge slots into which go ROM cartridges including View, Viewsheets, Pascal, Logo and our own popular AP4 disc upgrade.

£43.43 excl VAT; £49.95 inc VAT

ADVANCED PLUS 6... a fully buffered 6 ROM expansion module for the Electron user. AP6 is fitted inside the advanced Plus 1 or modified Acorn Plus 1 (when used with the Acorn Plus 3, 5 ROM sockets are available). All sockets are designed to accept either ROM/EPROMS or RAM chips. A further feature is the optional AP7 upgrade.

"A marvellous piece of design... don't hesitate buy it!" - *EU, May '88*
£33.00 excl VAT; £37.95 inc VAT

UPGRADE SERVICE for the original Acorn Plus 1 to Advanced Plus 1 and AP6. This will provide all the benefits of AP6 and also includes the printer circuit modification to some modern printers. (AP6 can be fitted to original Plus 1 by users with soldering experience) for upgrade service add £7,000 + VAT to AP6 price ie

£40.00 excl VAT; £46.00 inc VAT

Incl. Mod Fitting + Testing & Carriage. Send to:
P.R.E.S. Service Department, PO Box 34, Shipley BD17 6DE

ADVANCED PLUS 5

A unique interface for those wanting the maximum expansion from just one slot in the PLUS 1 AP5 contains:- A User port for connecting peripherals such as a mouse, 1 MHz bus allowing Music 5000(e), prommers and various control devices to be added. Tube interface for connecting and Acorn 2nd processor or even a Master Turbo board (through a 'Co-Pto Adaptor') - & TWO spare ROM sockets (1 high priority). All hardware connections are Acorn compatible thereby allowing many BBC products to be added (remember that some software modification may be necessary for the Electron). So although some expansion options may appear expensive on an Electron you do have upward compatibility.

£55.00 Ex VAT; £66.70 inc VAT

Advanced Plus 2 ROM

We feel this is one of the best, low cost, additions we have produced for the Electron & +1 user, especially for Plus 3, AP3, ABR & AP7 users now with this easy to fit upgrade you can add:

- 1) Fix for Tape filling system in Hi-res screen modes.
- 2) * ROMS - displays ROM/ROM images present.
- 3) * UNPLUG - disables ROM/RAM image.
- 4) * INSERT - enables or inserts a previously unplugged ROM.
- 5) * KILL - totally disables the Plus 1.
- 6) * LOCK - locks a sideways RAM bank in ABR, AQR, AP7 7) * LROMS - locks all sideways RAM banks found.
- 8) * UNLOCK - to unlock a sideways RAM bank in ABR, AQR, AP7 9) * UROMS - to unlock all sideways RAM banks found.
- 10) * SAVEROM - saves a ROM image to current filing system.
- 11) * LOADROM - loads a ROM image from current FS into a RAM bank.
- 12) * FORMAT - will format an ADFS disc for Plus 3 or AP3.
- 13) * VERIFY - tests every sector on an ADFS disc.
- 14) * VFORM - formats and verifies an ADFS disc in one command.
- 15) * BUILD - creates a text file that can be used by *EXEC (ie IBOOT).
- 16) * LIST - displays a numbered listing of a text file.
- 17) * TYPE - displays a file on screen with no line numbers.
- 18) * DUMP - to view a file's contents on screen.
- 19) * LANG - selects a default language to be booted on {CTRL-BREAK}
- 20) * HELP - provides a full 'help' list on all the ROM's commands.
- 21) * AQRPAGE - selects specified page in AQR.

Now there is no need to search for your utilities disc every time you want to Format/Verify a disc, Build a IBOOT file or lock/unlock/Load a ROM image into ABR PLUS much more... the ideal companion from the company that produces the Acorn Plus 1.

£11.00 ex VAT; £12.65 inc VAT

The AP2 is the definitive Plus1 ROM... I'm not sure what I'd do without it... like all of PRES's other products, it's been well worth waiting for!"

July '88

FILING SYSTEMS

ADFS VERSION 1.1

Suitable for existing Plus 3 or A.P.4 users. This new version has the software fixes for Zsysshelp, write protect disable & compaction. Also Winchester code has been replaced with the necessary driving software to handle AQR as a 256k RAM DISC. Please note - ADFS is Acorn's adopted standard filing system supplied on the Plus 3, Master 128, Master Compact & now the Archimedes. Supplied on 16k ROM with Welcome disc & utilities. Please state 3.5/5.25 welcome disk.

£14.95 ex VAT; £17.19 inc VAT
(ADFS manual supplied separately)

ADFS EOO

For Electron users with either Plus 3 or A.P.4 and 32k of S/W RAM i.e. ABR. All the benefits of ADFS but without all the loss of RAM! Includes all the software 'fixes' call for managing the new & original ADFS. One of the most frequent question we are asked: "How do I get back the memory lost on my Plus 3 system?" Answer: PRES ADFS & EOO regains 3.75k leaving page (0 & EOO the same as Tape!

ADFS EOO supplied; 3.5 ADFS (manual available separately)

£14.95 ex VAT; £17.95 inc VAT

5.25 ADFS (manual avail. sep.) £14.00 ex VAT; £16.10 inc VAT

5.25 DFS(2 discs + ADFS manual) £19.00 ex VAT; £21.85 inc VAT

(See Special Package Prices)

DISC INTERFACES (Plus One required)

AP3 INTERFACE: As supplied with AP3 package. A fully Acorn compatible disc interface that will accept any standard 5.25 or 3.5 80T drive with PSU. It runs Acorn's ADFS (as supplied on Acorn Plus Three, Master 128, Master Compact and now the Archimedes) supplied with A.D.F.S. manual and welcome disc + Utilities and 3 bonus games (please specify 3.5 or 5.25 80T format). Also provides a spare 16K rom socket.

Price £52.00 ex VAT £69.95 inc VAT

AP4 INTERFACE: A fully Acorn compatible disc interface that will accept any standard 5.25 or 3.5 drive with PSU. It runs the 1770 DFS (as fitted in the BBC 'B' and Master) keeps pace at &EOO - has utilities in rom and provides a spare 16K rom socket (DFS manual included).

Price £61.36 ex VAT £69.95 inc VAT

AP34 INTERFACE: Get the best of both filing systems. Now available from PRES the ultimate interface. Fitted with both Acorn approved filing systems... Acorn's current standard ADFS and Acorn 1770 DFS (which can be run at &EOO) ADFS and DFS manuals supplied + ADGFS welcome disc with utilities.

Price £69.55 ex VAT £79.98 inc VAT

SOFTWARE PRODUCTS

ADVENTURE GAMES 5 different adventure discs:- Ultimate Prize, Dreamtime, Private's Peril, Taroda Scheme & Stranded.

All 3.25 ADFS £6.95 ex VAT £7.99 inc VAT each disc

Advanced Games Compendiums - on disc with so many of our products providing more 'serious' add-ons for the Elk; we thought it was time to allow easy Access to some of the favourite games ON DISC!... Three volumes of popular games, previously only available on tape, now 'instantly' loadable from menu on disc. Titles such as Croaker, Felix & Fruit Monsters, Killer Gorilla, Danger UXB, Swoop, Ghoul, Invaders, Swag, Galactic Commander, Felix in the Factory, Bumble Bee, Gauntlet, Frenzy, Moonraider, Positron etc. etc.. Each volume contains EIGHT menu selectable games.

3 1/2 ADFS £9.99 ex VAT £11.49 inc VAT

5 1/4 DFS £8.99 ex VAT £10.34 inc VAT

View the Acornsoft word process for the Electron & +1 inc. full documentation

£14.94 inc VAT

ViewSheet The Acornsoft... spreadsheet for the Electron & +1 inc. full

documentation £14.95 inc VAT

View & ViewSheet special price... £22.00 inc VAT

SPECIAL PACKAGE PRICES

| | | |
|----------------------------|----------------|-----------------|
| AP1 + AP3 | £130.39 ex VAT | £149.95 inc VAT |
| AP1 + AP6 | £69.52 ex VAT | £79.95 inc VAT |
| ABR + 3.5" ADFS E00 | £44.30 ex VAT | £50.95 inc VAT |
| ABR + 5.25" ADFS E00 | £43.33 ex VAT | £49.95 inc VAT |
| ABR + 5.25" DFS (ADFS E00) | £47.78 ex VAT | £54.95 inc VAT |
| AP5 + Music 5000 | £152.17 ex VAT | £175.00 inc VAT |
| AP7 + 3.5" ADFS E00 | £49.52 ex VAT | £56.95 inc VAT |
| AP7 + 5.25" ADFS E00 | £48.65 ex VAT | £55.95 inc VAT |
| AP7 + 5.25" DFS (ADFS E00) | £52.13 ex VAT | £59.95 inc VAT |
| AP4 + CS400 | £147.78 ex VAT | £169.95 inc VAT |
| AP1 + AP4 + CS400 | £182.60 ex VAT | £209.99 inc VAT |

***** ACCESSORIES *****

Electron power switch This useful accessory provides a double-pole in-line switch with a new power jack-plug already attached: just connect to the existing lead, heaving removed the old jack-plug.

Plus 3 2nd. drive adaptor converts the fitting at the back of the original drive which has been configured to Drive 1.

AP3 2nd. drive lead replaces existing drive cable with one containing an extra connector for adding a second drive configured as Drive 1.

Electron Advanced Users Guide £3.95

Electron Assembly Language book by Bruce Smith £2.95

Software on disc for above 3.5 ADFS £3.50 5.25 £2.50

ADFS Guide Manual £5.00

DISCS 3.5 10 in plastic library box £19.95

5.25 twin gift pack £1.49

M = Master B = BBC C = Compact E = Electron

Please send order to:-
P.R.E.S. LTD.,
6 Ava House, High Street,
CHOBHAM, Surrey, England.
GU24 8LZ. Tel: 0276 72046 (24 hr).
Fax: 0276 51427
(Mail order only)
All our prices include
UK delivery & VAT



(in event of any query-
please include your tel. no.)

| Name | Product | Qty | @ | Total |
|------------------|-------------------------|-----|---|-------|
| Address | | | | |
| Postcode | | | | |
| Tel: | I enclose payment for £ | | | |
| Credit Card No.: | Exp date (Ref A114) | | | |

Don't be a Turkey this Christmas...



Give a present
which will last
throughout
the year!
Get a subscription to
RISC User or BEEBUG

Yule be better off with BEEBUG!

BEEBUG

MAGAZINE & USER GROUP

with 7 years of experience in
supporting the
BBC MICRO & MASTER

Over 20,000 Members

already benefit from:

- a magazine full of new ideas, stimulating programs and useful hints
- free help from our technical support team,
- showroom with friendly knowledgeable staff,
- swift mail-order service,
- our own software range at 25% discount to members and 5% discount on a wide range of other products,
- trade-in service to upgrade your system

All for just £14.50 a year!

For more information on BEEBUG ask for
our *free* INFORMATION PACK

RISC USER

MAGAZINE & USER GROUP

dedicated to the
Archimedes

SUBSCRIPTION RATES (1 YEAR)

| BEEBUG or RISC USER | BEEBUG and RISC USER joint subscription |
|------------------------|--|
| £14.50 | UK, BFPO, Ch. I. £23.00 |
| £20.00 | Rest of Europe & Eire £33.00 |
| £25.00 | Middle East £40.00 |
| £27.00 | Americas & Africa £44.00 |
| £29.00 | Elsewhere £48.00 |

I would like to subscribe to,
and become a member of:

Please Tick
AU/1

- ☐ BEEBUG Magazine and Support Group
☐ RISC USER Magazine and Support Group

Name _____

Address _____

I enclose a cheque for £ _____ (all cheques must be in pounds sterling,
drawn on a UK bank) or,
Please debit my Access/Visa account No _____

Expiry Date _____

Signature _____



Send to: **BEEBUG LTD** Dolphin Place, Holywell Hill, St. Albans, Herts AL1 1EX
or telephone our 24 hour hotline: St. Albans (0727) 40303, Fax: (0727) 60263, Micronet: *BEEBUG

ACT NOW AND GET YOUR PRESENT FOR CHRISTMAS!

NEWS

RISC OS receives CC's approval

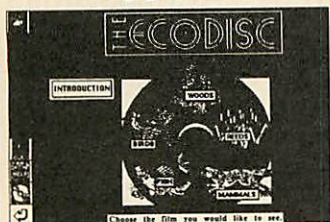
The new Archimedes operating system RISC OS – to be released in April – has found an unlikely supporter in Charles Moir of Computer Concepts. He was so dissatisfied with the current system, Arthur, that he developed his own operating system, Impulse, to use with new Computer Concepts programs and his RISC processor card for IBM-compatibles. The programs will now run under either RISC OS or Impulse.

Having seen RISC OS in operation he said: 'It overcomes the old problems with Arthur.'

Ample albums

Hybrid has released five more albums of Ample music at £4.95 each and the Music 5000 Synthesiser Junior price has been fixed at £99.

BBC supports Mac



The BBC is to support the Apple Mac running its interactive video discs, as well as the Domesday system and the IBM PC.

A Mac Plus or SE controlling a Laservision player with its own monitor was due to be demonstrated at the BIVA show. The software for the *Ecodisc* (above) was written using Hypercard.

Arc offer

Watford Electronics is giving away a free Panasonic printer worth £170 with all Archimedes systems.

New era begins for BBC users

The end of 1988 marks a watershed in the history of Acorn Computers, and of *Acorn User*. Acorn celebrates its tenth birthday in December, and is coming out of its youth, symbolised by 8-bit hardware, and into the world of 32-bits and Unix.

There is now no Acorn-badged machine costing less than £2500, and even when the 410 Archimedes appears, it will cost some £1500. All the sub-£1000 machines are in BBC livery.

And *Acorn User's* reader base is at the cheaper end of the range, from the BBC B through the Electron and Master to the Arc 310.

Our change of name reflects

that fact. It also denotes that Redwood Publishing, and hence *Acorn User*, are a division of the BBC. So the magazine has the right to use the famous BBC logo.

Redwood has been a part of BBC Enterprises for some time. Although this hasn't affected the editorial balance of the magazine, over the next few months the magazine will get a new, fresher look. It has been retitled '*BBC Acorn User*', to reflect the fact that most of the readership of the magazine have Acorn computers with the BBC name.

Despite the change in look and name, our mix of articles, ranging from professional applications through the best

educational coverage to programming utilities and advice on wordprocessing, will remain as informative as ever.

The new name won't rule out the Electron – the present coverage will continue. And Arc users need have no fear: their machines will continue to be written about too. *BBC Acorn User* will still support the whole of the BBC and Acorn range of machines.

The same authors, the same coverage, a new look: the same magazine but different. We know you'll let us know what you think. Please continue to send your observations, congratulations (!) and complaints to the same address.

Price war starts

by Christina Neal

CDS is offering hardware at trade prices – worth up to £200 on an Arc 310 – but you have to pay £150 to join the club first. The introduction of 'warehouse marketing', which has been a big success in the US, is sure to spark off a storm among dealers.

However, Acorn's hands are tied. 'We can't tell dealers what to charge,' said spokesman Michael Page. But he added: 'All bargains have to be looked at very carefully.'

Dealers have criticised the idea on the grounds of the lack of support, but CDS plans to employ its own machine experts at the end of

a phone hot line.

John Simnett of Acorn distributor Kelator warned: 'Dealers offering high levels of discounts have a long history of going into liquidation.'

'Some operate from a private house or a lock-up garage, and find that even the most basic computer can go wrong. Kit gets sent back to them and they can't handle the problems.'

Andy Spoor of CDS replied: 'The number of members we've got makes it sufficient for us to sell computers so cheaply. We also have technical support so you can phone us if you want to.'

Unix clash in new year

The battle to dominate the market for cheap Unix workstations is warming up.

Atari claims its transputer workstations will be available this month with an entry-level price of around £1500.

Atari's machine challenges Acorn's Unix system – expected to cost £4000 – when it is launched in the new year. Both computers offer new technologies to deliver high performance cheaply.

Acorn will be selling a popular range of business software to go with its system. *Uniplex II Plus* is an integrated package with wordprocessing, spreadsheet and database.

Archimedes

BEEBUG the recognised Archimedes specialists.

ARCHIMEDES 300 SERIES

Always in stock

| | | |
|--------------------------|---------|---------|
| 0190G 305 Entry System | 803.85 | 763.66 |
| 0191G 305 Mono System | 872.85 | 829.21 |
| 0192G 305 Colour System | 1056.85 | 1004.01 |
| 0193G 310 Entry System | 960.25 | 912.24 |
| 0194G 310 Mono System | 1029.25 | 977.79 |
| 0195G 310 Colour System | 1213.25 | 1152.59 |
| 0257G 310M Entry System | 1029.25 | 977.79 |
| 0258G 310M Mono System | 1098.25 | 1043.34 |
| 0259G 310M Colour System | 1282.25 | 1218.14 |

ARCHIMEDES 400 SERIES

| | | |
|-------------------------|---------|---------|
| 0263G 440 Entry System | 2908.35 | 2762.93 |
| 0265G 440 Colour System | 3161.35 | 3003.28 |

ARCHIMEDES SOFTWARE

| | | |
|--------------------------------|--------|--------|
| 1089C Kermit | 56.35 | 53.53 |
| 1080D Ansi C | 113.85 | 108.16 |
| 1081C ISO Pascal | 113.85 | 108.16 |
| 1082D Fortran 77 | 113.85 | 108.16 |
| 1083B Twin | 33.35 | 31.68 |
| 1084D Logistix | 113.85 | 108.16 |
| 1086D Prolog X | 228.85 | 217.41 |
| 1087D Lisp | 228.85 | 217.41 |
| 0900B PC Software Emulator | 113.85 | 108.16 |
| 1088D 1st Word Plus | 91.94 | 87.34 |
| 0901C Archimedes Termulator | 67.85 | 64.46 |
| 0902D ARM Assembler Package | 228.85 | 217.41 |
| 0903B EMR Sound Synthesiser | 49.95 | 47.45 |
| 0904B EMR Creations Disc | 19.95 | 18.95 |
| 0905E Logotron Logo | 69.00 | 65.55 |
| 0906D Pipedream | 113.85 | 108.16 |
| 0917B Pipedream Spellcheck | 49.45 | 46.98 |
| 0908C Flying Start II Database | 99.95 | 94.95 |

PRICES INCLUDE VAT

Where two prices are shown, the first is our full price and the second our members price.

| | | |
|----------------------------------|--------|--------|
| 0909B Archeffect | 24.99 | 23.74 |
| 0910B ArcTFS | 29.95 | 28.45 |
| 0911B Autosketch | 91.54 | 86.96 |
| 0912B ARC-PCB | 99.95 | 94.95 |
| 0913B ARC-PCB (with autorouting) | 195.00 | 185.25 |
| 0914B Linguinity Presenter | 29.84 | 28.35 |

BOOKS

| | | |
|----------------------------------|-------|-------|
| 1242C Programmers Ref. Man. | 29.95 | 28.45 |
| 1211B Arch. Assembly Lang. | 14.95 | 14.20 |
| 0915B Program Disc for code 1211 | 9.95 | 9.45 |
| 0916C Code 1211 & 0915 together | 21.95 | 20.85 |

CLARES

| | | |
|-----------------------------|--------|--------|
| 0937C Pro-Artisan | 169.95 | 161.45 |
| 1095C Artisan | 39.95 | 35.96 |
| 1099C Artisan Support Disc | 19.95 | 18.95 |
| 1096C Graphic Writer | 29.95 | 26.96 |
| 1097C Archimedes Toolkit | 39.95 | 35.96 |
| 1098C Alpha Base | 49.95 | 44.96 |
| 1094B Sound & Graphics Demo | 11.50 | 10.93 |

MEMBERS SPECIAL OFFER ON ARCHIMEDES

0% 12 Months Finance
£50 Voucher to spend as you wish
Printer Lead, Ten 3.5" discs,
Lockable disc box
And Either
Free upgrade to Risc OS
& Artisan Package
OR
Free PC Emulator

See details on other advert

MINERVA

| | | |
|---------------------------------|-------|-------|
| 1079B Arc Buffer Module | 19.95 | 18.95 |
| 1078B Render Bender | 79.95 | 75.95 |
| 0931C Sigmashet | 69.95 | 66.45 |
| 0932C Gammaplot | 69.95 | 66.45 |
| 0920C Deltabase | 29.95 | 28.45 |
| 0921C System Delta Plus | 69.95 | 66.45 |
| 1233C Sys. Delta Plus Ref. Man. | 29.95 | 28.45 |
| 0922C Order Processing* | 64.95 | 61.70 |
| 0923C Sales Ledger* | 64.95 | 61.70 |
| 0924C Stock Manager* | 64.95 | 61.70 |
| 0925C Purchase Ledger* | 64.95 | 61.70 |
| 0926C Nominal Ledger* | 64.95 | 61.70 |
| 0927C School Administrator* | 79.95 | 75.95 |
| 0928C Video Rental* | 69.85 | 66.36 |
| 0929C Reporter* | 24.95 | 23.70 |

* Requires System Delta Plus

BEEBUGSOFT

| | | |
|-----------------------------|-------|-------|
| 0100C Masterfile ADFS | 22.00 | 16.50 |
| 0101D Hearsay | 69.00 | 51.75 |
| 0102B Archimedes DFS Reader | 10.42 | 9.90 |

ARCHIMEDES KEYSTRIP HOLDER

Fill-in your own definitions or attach ready printed keystrips to our smart spiral bound holder.
Members Price £2.95 Code 0794B

ARCHIMEDES KEYBOARD EXTENSION LEAD

Extend your keyboard cable with our 1 metre curly lead
Members Price £7.95 Code 0832B

OTHER HARDWARE

| | | |
|--------------------------------|-------|-------|
| 0805D CC ROM Podule | 56.35 | 53.53 |
| 0806B Battery Backup for above | 11.50 | 10.93 |

| | | |
|-------------------------------|--------|--------|
| 0803B Armadillo Sound Sampler | 126.50 | 120.18 |
| 0825C IEEE488 Podule | 326.50 | 310.17 |
| 0802C Chromalock Podule | 339.25 | 322.29 |
| 0808C Watford Video Digitiser | 286.35 | 272.03 |

ARCHIMEDES UPGRADES

| | | |
|--------------------------------|--------|--------|
| 0234B Econet Board (as M128) | 48.88 | 46.43 |
| 0266C 0.5Mb RAM (305 only) | 171.35 | 162.78 |
| 0267G Floppy Disc Drive | 143.75 | 136.56 |
| 0271D I/O Podule * | 97.75 | 92.86 |
| 0268G 20Mb Hard Disc (300's) * | 573.85 | 545.16 |
| 0269C Podule Backplane | 44.85 | 42.61 |
| 0270D ROM Podule * | 67.85 | 64.46 |
| 0272D MIDI add-on to I/O | 44.85 | 42.61 |
| 0273D MIDI Podule * | 79.35 | 75.38 |

* Requires Podule Backplane

ARCHIMEDES LEADS

| | | |
|----------------------------------|-------|-------|
| 0832B Keyboard Extension Lead | 8.37 | 7.95 |
| 0558B SKART Lead | 9.42 | 8.95 |
| 0425C Archimedes Printer Lead | 9.42 | 8.95 |
| 0795C 5.25" Disc Drive Interface | 29.05 | 27.60 |
| 0796C Serial Link Kit & Disc | 18.16 | 17.25 |
| 0797B Just Serial Link Cable | 12.11 | 11.50 |
| 0826B Arch. to Magic Modem | 7.32 | 6.95 |
| 0827B Arch. to Linnet Modem | 7.32 | 6.95 |
| 0828B Arch. Audio Lead | 6.26 | 5.95 |

ARCHIMEDES GAMES

| | | |
|--------------------------------|-------|-------|
| 0936B Alerion | 14.95 | 14.20 |
| 1179B Zarch | 19.95 | 18.95 |
| 1187B Conqueror | 24.95 | 23.70 |
| 0930B Minotaur Game | 14.95 | 14.20 |
| 0935B Dread Dragon Droom (ed.) | 18.95 | 18.00 |

ARCHIMEDES ACCESSORIES

| | | |
|-----------------------------|------|------|
| 0794B Arch. Keystrip Holder | 3.11 | 2.95 |
| 0789B Blue Beebug Mouse Mat | 3.68 | 3.50 |
| 0788B Red Beebug Mouse Mat | 3.68 | 3.50 |
| 0716B Archimedes Dust Cover | 9.00 | 8.55 |

ARCHIMEDES SPARES

| | | |
|------------------------------|-------|-------|
| 0839B Mouse | 51.49 | 48.92 |
| 0838D Keyboard Circuit Board | 92.18 | 87.57 |

Carriage

Carriage is denoted by the letter contained in the stock code. A-60p, B-E1, C-E2, D-E3, E-E4, G-E7. When ordering several items, use the highest price code and half of each subsequent code. For courier delivery use code G.

Credit Cards



Access and Visa orders are welcome, and may be placed by letter or telephone (24 hours).

BEEBUG LTD,

Dolphin Place, Holywell Hill,
 St. Albans, Herts., AL1 1EX.

(0727) 40303

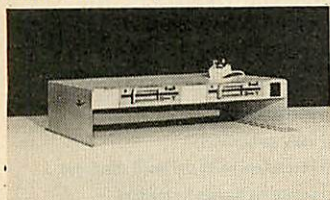
Please telephone for a Free Information pack and Archimedes brochure.

NEWS IN BRIEF

■ *Euclid*, the 3-D graphics package from Ace Computing, has been upgraded. Extra facilities such as shading to show the source of light have been added and the program has been made simpler to use with the addition of a new help facility. The price remains the same at £45.

Users who have already bought and registered their copies will receive the upgrade free. The program consists of two parts, the *Euclid* design program itself and a relocatable module which allows programmers to incorporate *Euclid* features into their own programs.

■ A range of new BBC bridge-unit disc drives from Cumana features various combinations of 40 and 80-track



Cumana bridges drive gap

drives in both 5.25-inch and 3.5-inch formats.

They allow users to transfer data and programs between the various disc formats. Prices range from £269 for the double 40-track 5.25in drive and £309 for the double 3.5in drive.

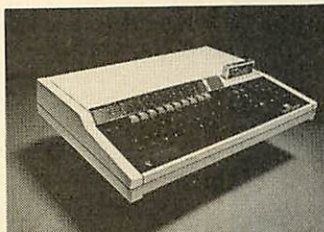
■ A new book from Sigma Press considers the complex issue of language translation by computer. *Computer Translation of Natural Language*, £12.95, discusses the problems found in translation. Readers can also buy a BBC micro disc explaining the solution the book's authors found, and including enough data for them to make simple translations themselves.

The languages used in the translation examples are French and English.

Extra Master sales cause shortage

Demand for the Master 128 has exceeded Acorn's expectations, and dealers are having to ask customers to wait while more machines are built. Despite Acorn's decision to produce an extra 40,000 machines earlier this year, demand for the computers remains unsatisfied. Acorn production manager Jim Merriman says Masters are being built as fast as possible and another 25,000 have been ordered for the first half of next year.

Apparently Acorn was surprised by sales of the Master. But David Bell, microsystems manager at the company, admits: 'There is still a great



Master sales take off

need for this type of product.'

John Simnett, director of major Acorn distributor Keltor, said: 'The demand for Masters has exceeded Acorn's expectations, and they haven't been able to ramp up production fast enough.'

'Sales have been improving rather than dropping off as

expected. It's very frustrating for us but augurs well for Acorn.'

'It may be that the LEAs are filling primary schools with Masters. Certainly one school I know has suddenly acquired eight of them. Whatever, there will be a shortfall till the end of the year.'

Some users have felt that Acorn has neglected support for its older products, but David Bell insists: 'There is plenty of new software coming out for our 8-bit machines. But most of it is for the educational sector and is not widely publicised outside the specialist press.'

Safety drive at show

The Archimedes has been helping to steer motorists to a better understanding of road safety. Visitors to October's Motor Show in Birmingham were able to design cars using a specially-written interactive program which emphasised safety.

They were given three minutes to put a car together by choosing pre-defined car parts from the program with the help of a special 225-key electronic touch pad. At the

end of each day the best design won a prize.

The program was a feature of Birmingham City Council's stand, which was promoting road safety. Another Archimedes showed weather and roadworks information from the AA Roadwatch, decoded through a teletext adaptor.

The programs were designed for the council by Crystal Presentations, a Birmingham company which specialises in computer-based displays.

Arc shares Econet work

ARCshare, the program for Econet networks which allows one Archimedes to do all the processing and thus speed it up, is now available. It costs £159.85 for a 10-station system and additional 10-user packs are £34.50.

John Simnett of European Communications Group said: 'Econet will be around for a long time.' The speed of the Archimedes could eventually lead to the adoption of a new standard such as the more expensive Ethernet.

Mac transfer widens View

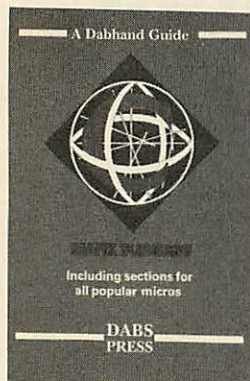
Moving files between totally incompatible computers used to be extremely difficult. At best you could try to transfer a plain text file with all codes removed.

But the increasing variety of computers in schools and offices demands a more practical solution for users skilled only in using familiar applications.

The new version of *View > Mac* from Human Computer Interface helps users with BBC machines and Apple Macintoshes. It can transfer files from a range of BBC programs — *View*, *Wordwise Plus*, *InterWord* and *View Professional* — into *MacWrite* and back again. The program is available on Mac disc with an educational price of £67.85. Users of the earlier version can upgrade for £21.85.

OFFERS

THE C HANDBOOK



The comprehensive guide to C

A behind the scenes storm has quietly been sweeping the microcomputer world during the last few years: it is the C programming revolution.

Mark Burgess has just completed perhaps the most comprehensive guide to C ever written. In a mammoth 512 pages he introduces the C philosophy in a highly readable no-nonsense manner. Page by page, you ascend the C ladder with simply illustrated and documented programs.

With 37 chapters, six appendices and glossary this book is amazing value for money. Programs from the book and many other useful utilities can be found on the program disc which comes with a user guide. Don't miss out – add this important publication to your library now.

Please send me _____ copies of *C: A Dabhand Guide* at £14.95
 _____ copies of C and 5.25-inch disc at £18.95
 _____ copies of C and 3.5-inch disc at £19.95
 _____ copies of C and 5.25-inch disc for PC (Master 512) at £19.95.

Please circle as appropriate: 40/80-track/ADFS/DFS/BBC/Master/Compact/Archimedes

I enclose my cheque/postal order for £_____ made payable to **Dabs Press**

☐ Please debit my Access/Barclaycard £_____

ACCOUNT NO EXPIRY DATE

NAME

ADDRESS

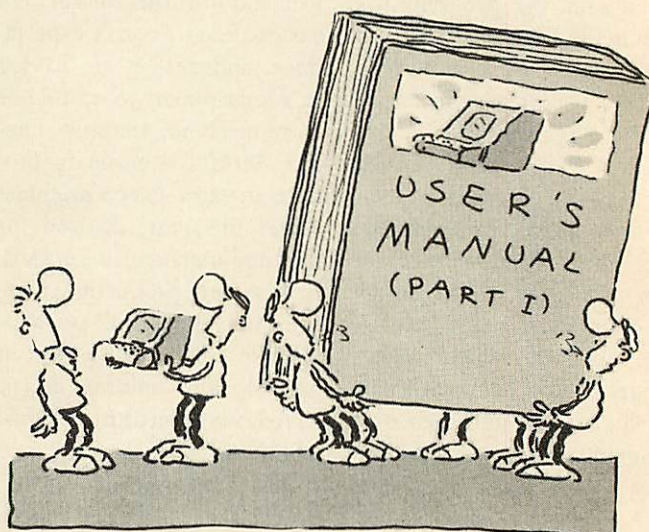
POSTCODE

SIGNED DATE

Send this coupon with your remittance to **C Book, Acorn User Merchandising, Redwood Publishing Ltd, 20-26 Brunswick Place, London N1 6DJ.**

Educational
COMPUTING

Subscribe to Educational Computing and get to grips with computers



Educational Computing magazine aims to help teachers at every level, and in every subject, to get to grips with computers. Whether you are teaching at primary, secondary or tertiary level, *Educational Computing* will show you what to do and how to do it.

Some of our past features have included:

- ☐ Who's buying which computers and why?
- ☐ Down-to-earth advice on desk-top publishing
- ☐ Putting in a network – the pleasures and pain
- ☐ An easy guide to fault finding on your micro
- ☐ Wordprocessing
- ☐ Using spreadsheets
- ☐ Government policy and how it affects you
- ☐ Computing courses for teachers

A classroom project is run in every issue. Recently we carried a very popular conservation project – tree-planting and pond-dipping were just two areas covered.

Educational Computing is published six times a year, twice every term. Take advantage of our special offer and receive two years issues for £16, or pay the full price of £9 for one year. Payment is easy, either fill in your official order number and we will invoice you, or pay by credit card or cheque. Send to: *Educational Computing*, Unit 5, Riverpark Industrial Estate, Billet Lane, Berkhamsted, Herts HP4 1HL.

If you would like to see a free sample issue, send us the coupon below.

I would like to subscribe to *Educational Computing*:

- ☐ for two years at £16 ☐ for one year at £9
- ☐ please send me a free sample issue
- ☐ please invoice £_____ Official order number _____
- ☐ I enclose my cheque for £_____ made payable to: **Redwood Publishing Ltd**
- ☐ please charge my Access/Barclaycard

NUMBER EXPIRY

NAME

JOB TITLE

ADDRESS

POSTCODE

SIGNATURE DATE TW01
 Send to: *Educational Computing*, Unit 5, Riverpark Industrial Estate, Billet Lane, Berkhamsted, Herts HP4 1HL

'Mind-blowing' ray tracer

Clares Micro Systems is now ready to release its ray tracing program, *Render Bender*. Work made possible by the program was first seen on the demonstration discs Clares was selling earlier this year, with both still and animated ray-traced pictures.

Stuart Watson, a designer working with Clares on the project, describes the pictures which can be created as 'mind-blowing'. Objects drawn must be precisely aligned so that their reflections appear in the spheres the program provides. Once this is done the viewpoint and direction of light

can be changed. Animation sequences can be stored and run.

Watson's design studio, Chameleon, is using Clares' package *ProArtisan* to design artwork and packaging both for Clares and other customers. 'We're trying to turn it into a package for design studios. At the moment it's great value for visuals and as a presentation tool, because it can quickly manipulate and change colours and textures.'

Watson is currently designing the packaging for a range of cosmetics and beauty care products using *ProArtisan*.



Graphics by ProArtisan, dumped by HP Paintjet

Lindis goes Dutch with new programs

The Archimedes world is expanding fast. Two new programs distributed by Lindis International originated in the Netherlands where the Arc is becoming a favourite with programmers.

Archimedes Image Manager was designed by a team at Delft University. It helps users clean up and edit pictures they have digitised on the Archimedes. Because it is a 'shareware' product, Lindis is charging only £9 per copy to cover duplication of the disc and the manual. 'AIM gives

you a clearer, sharper image with digitised pictures,' explains Lindis' Jack Lillingston.

The second program is provisionally known as *X-Ample Story* after the Dutch company which originated it. It allows you to link together and store on one disc up to 20 pages of text, graphics and sprites. This can then be scrolled over images such as those supplied by the AIM package. The price has not yet been fixed but the program should be available from the beginning of January.

THE COMMS COLUMN

■ About 200 people attended Adventure T88, the annual convention of players and designers of on-line multi-user games and computer adventures. It was organised by Clubspot, and held in Sutton Library on October 22. Several talks were given by leading adventure designers, particularly in the multi-user field, such as *Tiger Tiger*, *Tarin*, and *Locoman*, who talked about the construction of multi-user games.

Many games were demonstrated such as the well-known *Shades* run by Telemap, *MUD2* from *Acorn User* contributor Simon Dally, and lesser-known ones such as *Guildhall* and *Trash*.

A new game handling system known as *The Butler* was launched at the convention. This is a system designed to route callers through to a number of adventures from one telephone number. The various games may be in the same location, or elsewhere.

The system is now running offering *Gods* and *The Zone*, two leading multi-user games, on 01-994 9119, on V21 (300/300 baud) and V23 (1200/75 baud) speeds. (*The Zone* formerly ran on 01-683 4507, and is a multi-user game for adults only.) Further information can be obtained either by asking people on the systems mentioned, from Clubspot's adventure section *Arena* which can be found in the Clubspot area of Prestel, or from Sheila Thomas, Prestel Mailbox 011110770.

■ At the recent *Micro User* show, I was given an early demonstration of *ArcComm*, the long-awaited Archimedes comms package from BBC Soft. The program is unique in its ability to work with all higher levels of viewdata as used by the French MiniTel and German Bildschirmtext systems, which combine

Prestel-type frames with high-resolution graphics. The program, which will only work under the forthcoming RISC OS, looks amazing — but no release date was forthcoming from BBC Soft. You can ask them yourselves on 01-576 0548.

■ New to the bulletin board scene is the *London City Magazine*, a BBC-oriented board run in London by Brian Green. It runs on SAFBBS software, and operates at V21 and V23 speeds. Both scrolling and viewdata formats are supported. General leisure interests feature strongly with sections on pop music, satellite TV, poetry, and horoscopes. There is a mode 7 graphics gallery, and a small selection of downloadable BBC programs. The board supports the CET format for downloading, and is on 01-468 7648, 24 hours a day.

■ The bulletin board spotlight falls on Alternative Reality, a scrolling viewdata board running on a BBC with HBBS software, operated by Robert Walker. If a scrolling terminal is used, you have the option of using mode 7 colour. The board contains BBC downloadable files, some on-line adventure games, including *Hitchhiker* and *Mad Island*, on-line psychiatric sessions with Eliza, a BBC software chart, and voting system, and many more items of interest to BBC users. There is even some Archimedes material included. Alternative Reality runs 24 hours a day at V21 and V23 speeds on 0959-76695.

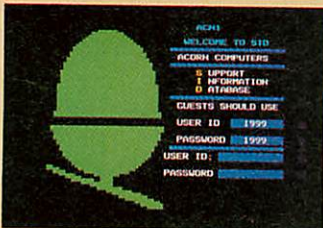
■ If you have any comms news for David Atherton, send it to him here at BBC Acorn User, 20-26 Brunswick Place, London N1 6DJ, or alternatively to his mailboxes on Prestel 942876210 or Telecom Gold/Microlink 72:MAG11596.

CUSTOMER HOTLINE

Phil Colmer is Acorn's head of customer liaison – in fact, he glories in the title Support Information Services Manager, Customer Services Department. This is the first of his columns for BBC Acorn User on the subject of Acorn's customer support.

■ SID is the name of Acorn's Support Information Database. It's an on-line, Prestel-type system that contains technical information on Acorn machines, reviews and news. There are also a number of special-interest areas that act a little like bulletin boards. You can post mailboxes to the customer support team at Acorn, so your own queries can be answered. In the past, you have needed to subscribe to SID, and to pay time charges of 8p per minute. But now you will be pleased to know that we have dropped the subscription charge, and you will only be charged for time spent on-line, with a minimum charge of £10 plus VAT per quarter.

The trial offer has also been slightly changed. If you return a completed direct debit mandate to me, you can try SID for three months and just pay for the used line time, without the imposed minimum charge. After those three months, the minimum line time charge will come into effect.



Leaflets giving more information on SID, along with direct debit mandates, are available from Customer Support (see below). Don't forget that you can look at most of the system anyway by ringing the demonstration system on (0223) 243642 with standard viewdata software.

■ For those of you who want to make the most of your 512 co-processor, we have three application notes which may make a difference. These are Master 512: applications compatibility and software list; Master 512: technical information and monitor documentation and The Edlin and Move user guide. All three are available free of charge on request from Customer Support.

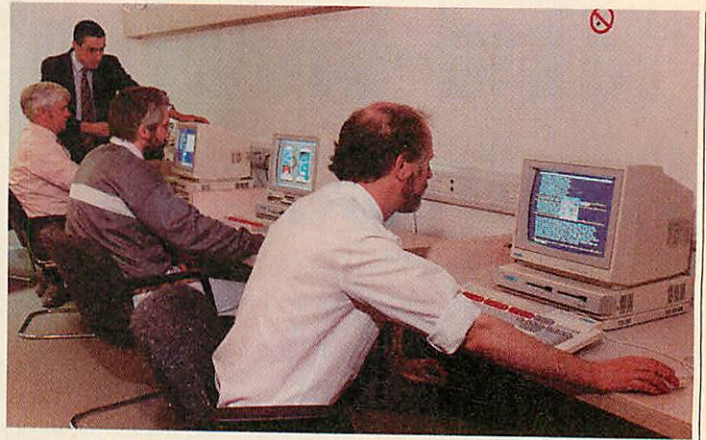
■ If you use the PC Emulator (version 1.20) on an Archimedes 310, you might not know that more MS-DOS memory can be obtained easily by starting it with *PC.PC instead of *PC. Emulate. If you don't have version 1.20, you can upgrade by sending your PC Emulator disc with a cheque for £15 to Customer Support.

■ May I take this opportunity to remind you of the best way to obtain technical support. In the first instance you should try your local dealer – a list is available from Customer Support. If this fails, then please feel free to write to Customer Support. In both instances, please provide as much information as possible on the problem, such as the version number of the software you are using.

Obviously, if you have a SID ID, then you will get a faster response using the technical mailboxes provided for that purpose.

■ To get a faster response to any query or request that you post to us, please address it to Customer Support, Acorn Computers Ltd, Fulbourn Road, Cherry Hinton, Cambridge, CB1 4JN.

■ This is the first of Phil Colmers monthly column in Acorn User. If you have any suggestions or comments on its contents, write to Phil at the above address or leave a message on SID.



Acorn's Training Centre hosts several courses a week

Training takes off

The increasing professionalism of the Acorn world is being shown by the growing number of organisations offering training courses to dealers and customers. Acorn itself was first off the mark with its Training Centre attached to the company's Newmarket Road offices in Cambridge.

Now distributor Kelator and dealer Hugh Symons Group have both announced their intention to run courses. Hugh Symons Group has already set up a new division, Computer Class, to meet the demand. It has its own training centre at the company's headquarters in Poole, but will hold courses on companies' own premises.

Kelator's plans are not so far advanced. Mike Howieson, who used to co-ordinate training at Acorn, is in the process of setting up courses. Initially these will be aimed at improving the knowledge of the dealers who supply Acorn equipment through Kelator, but Howieson stresses: 'We will provide hardware and software training to any corporate client who needs it or to any other interested organisation.'

Acorn recently held its first weekend dealer conference. The latest applications for the Archimedes were demonstrated and there were seminars on such topics as hardware expansion for the Archimedes.

The sharper image

If your laser printer conforms to the Hewlett Packard Laserjet standard, a new typesetting program from Mijas Software could improve output. Text can be imported from any wordprocessor and printed out in one of the proportionally spaced fonts available on cartridge. The program costs £20.

■ Two new laser printers will help to make this technology more affordable. Intelligent Interfaces are distributing the Olympia Laserstar 6 which



Mannesmann Tally's MT905

will cost £1492.70. Mannesmann Tally, Europe's largest producer of printers, has launched the MT905 at £1395. Both printers support the Diablo and Hewlett Packard Laserjet II standards.

Archimedes

Now Available from BEEBUG

featuring THE NEW RISC OS

Beebug the leading specialist dealers in Archimedes offer the best deals as well as comprehensive support for you and your computer.



APR

0

We are now able to offer-

FREE RISC OS or PC EMULATOR

Subscribe to RISC USER (UK £14.50), the Archimedes magazine, and benefit from the additional FREE offers shown above. In addition you will have free access to our expert technical support team to assist and advise you.

0% Finance over 12 months
£50 Voucher to spend as you wish
FREE and FREE RISC OS and Clares Artisan
FREE or FREE PC Emulator

In addition, purchasers of a 440 system will receive a free copy of the First Word Plus Wordprocessor.

0% FINANCE

Now over 12 months. Please phone for an application form. Return it with the deposit and we will be able to despatch your machine within 48 hours of receipt.

| | Cost | Deposit | | Cost | Deposit |
|------------|---------|---------|-------------|---------|---------|
| 305 | 801.60 | 66.80 | 310M | 1027.00 | 85.62 |
| 305 Mono | 870.60 | 72.55 | 310M Mono | 1096.00 | 91.37 |
| 305 Colour | 1054.60 | 87.92 | 310M Colour | 1280.00 | 106.74 |
| 310 | 958.24 | 79.87 | 440 | 2906.10 | 242.23 |
| 310 Mono | 1027.00 | 85.62 | 440 Colour | 3159.10 | 263.35 |
| 310 Colour | 1211.00 | 100.88 | | | |

Featuring Risc OS

The exciting new multi-tasking operating system for Archimedes, RISC OS, will be available early in 1989. Purchase an Archimedes under this scheme and you will be one of the first in the country to receive RISC OS, as soon as it becomes available. Your copy will be sent to you to install, or if you prefer, we will install it for you free of charge.

24 or 36 Months Credit and Trade ins

Should you prefer, we are also able to offer credit over 24 or 36 months at 13.75% flat rate (typical APR 27.5%). We are also able to offer up to £225 for your old BBC computer. Please ask for details.

Education and Health Discounts

Attractive discounts for schools, colleges and Health Authorities. Please ask for details.

**TO FIND OUT MORE
PHONE OR WRITE NOW.
TEL: 0727 40303**

We offer a complete service, including Advice, Technical Support, Showroom, Mail Order and Repairs. Our showroom in St. Albans stocks everything available for the Archimedes. Call in for a demonstration.

Please indicate your requirements below.

Subscription to Risc User (£14.50 UK) ☐ Information Pack and Catalogue ☐ 0% Finance Form for 305/310/310M/440 Base/Mono/Colour ☐ 12/36 Months Finance Form for 305/310/310M/440 Base/Mono/Colour ☐ Trade In BBC/Master/Compact ☐ Purchase 305/310/440 Base/Mono/Colour ☐ UK Courier Delivery £7.00. Overseas please ask for a quotation. Prices include VAT

I enclose a cheque value £.....

Please debit my Access/Visa/Connect Card No Expiry...../..... with £.....

Name

Address

Signature

WORK OF ART BY VAN GOGH.



ARTWORK BY PRO·ARTISAN

*Van Gogh. A true master, producing masterpieces with oils and canvas. Had he been painting today who knows what modern miracles he might have taken advantage of. Like **Pro-Artisan**, a computer graphics and image manipulation package. Which combined with Archimedes produces breathtaking graphics all at a movement of a mouse. Bending, shaping, colouring, toning. Giving any artwork the potential to be a **work of art**.*

PRO·ARTISAN

THE ART OF GRAPHICS MANIPULATION.

CLARES MICRO SUPPLIES, 98 MIDDLEWICH ROAD, RUDHEATH, NORTHWICH, CHESHIRE CW9 7DA. Tel: 0606 48511

Introducing View to students

ESM has released a range of packs to help teachers and students become familiar with the *View* wordprocessor, spreadsheet and database.

The three packages in the *An Introduction to...* series are supplied in sets of five student workbooks at £17.50 each. The materials were developed by Hampshire TVEI Centre and are suitable for GCSE, TVEI, RSA and Pitman Information Technology and Business courses.

A disc covering all three packages is available for £5.

And ESM has released a Concept Keyboard version of the ever-popular *Podd*. A set of 52 photocopiable activity cards costs £12.50.

Two new Anita Straker adventures, always a popular feature of ESM's list, are now available — *Puff* (£16.95) and *Martello Tower* (£16.95). Both provide challenging logical and mathematical problems for children in the 8-10 years age group.

New from Sherston

Sherston Software will be demonstrating their latest releases at the BETT 89 show and will be repeating their free approval service, so that visitors may take software away for inspection.

MapVenture is a geography/map skills package for top juniors and lower secondary pupils. *The Micro Bugs* is an educational adventure by Simon Hosler and *The Teddy Bears' Picnic* is a topic-based package continuing Sherston's tradition of materials for younger children.

Sherston Software, Swan Barton, Malmesbury, Wilts.

Amiga follows Mac down Beeb path

Commodore is set to follow Research Machines and Apple in releasing BBC Basic and a model B emulator for its machines to improve their appeal to schools. Acorn has also upgraded its BBC emulator for the Archimedes, now called *65Host*, which will come with the RISC OS upgrade to the operating system in April.



Amiga: to run BBC software

Software is being written for the Amiga so it can run BBC programs which are compatible with the second processor, and plans to add on the ability to read Acorn DFS format discs.

The BBC Basic is written in

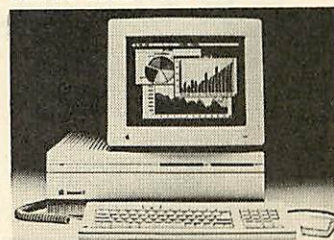
68000 code, and the emulator is clever in that it uses this when it comes across Basic in a program, thus speeding things up. Multitasking can be achieved with up to three copies of the emulator running at the same time under the Amiga desktop.

A version demonstrated to *Acorn User* looked about the same level as the emulator originally supplied with the Arc, and accepts most operating system 'star' commands. It is expected to cost about £50 and should be available in the spring.

And Apple has released a document outlining its strategy called 'Connectivity for Education'. This details developments outlined in November's issue for BBC Basic, transferring application files, and other projects.

New products include an AppleTalk to Econet link,

and an interface box from Resource to mimic the BBC's User Port. This means that devices such as the Concept Keyboard and robotics kits can be used with the Mac.



Mac: to get User Port

The Resource Controller is almost a BBC in a box with its own processor, interface chips and memory.

All these products can be seen at the BETT Show in January. Commodore, The Switchback, Gardner Rd, Maidenhead, Berks SL6 7XA. Apple, Education Information, Freeport Apple, Eastman Way, Hemel Hempstead, Herts HP2 4BR.

Your best BETT

BETT 89, to be held at the Barbican Exhibition Centre in London from January 18 to 21, is set to provide visitors with even more for their money this year.

Following the success of seminar sessions last year, the whole range of lectures and discussions is now open to all visitors. The Wednesday sessions will deal with management issues including Local Finance Management (LFM) and the profiling of students. On Thursday, curriculum matters will be aired and on Friday, training in higher education will be exam-

ined. To enrol in the seminar sessions, contact EMAP Exhibitions. Delegates may also enrol at the door on the day if there are any free places.

The exhibition is expected to host visitors from 14 countries — plenty of export potential for hardware and software manufacturers.

Winners of the 1988 Education Technology Awards will be announced during the four days of the exhibition.

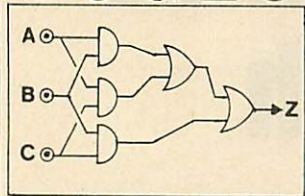
The exhibition is free to teachers and details are available from EMAP Exhibitions, 12 Bedford Row, London WC1R 4DU.

Software list

Teachers interested in rediscovering the freely-copiable *Blue File* Software that was made available throughout MEP will soon be able to obtain copies from MESU/NCET in Coventry. The list of titles which were dispersed around the country after the demise of MEP is to be consolidated by MESU and should be available from February.

Special Needs materials are still available from the Special Needs Software Unit, Manchester Polytechnic, Hathersage Rd, Manchester M13 0JA. MESU, Science Park, University of Warwick, Coventry.

LOGIC



BBC £19.95 Econet £29.95

- * Construct networks, up to 50 elements
- * Obtain Truth Tables, Algebraic expressions
- * Single-Step inputs
- * Screen Dump
- * Investigations
- * Suitable for GCSE and A level Computing, Physics, Electronics

PROFILE

```

choose comments
save comments
edit comments
print a profile

create comment bank
edit comment bank
select i/o options
help
quit
    
```

BBC £49.95 Econet £59.95

- * Comment Banks provided for CPVE, TVEL, UCCA
- * Create and Edit your own comment banks - up to 90 sets of comments
- * Edit, format, print student profiles
- * User-friendly menu driven software

Edgerton Bank, Edgerton Road, Edgerton, Huddersfield HD1 5RB
Tel. (0484) 544928

512

users,

Solve the compatibility problems of your MASTER 512 or BBC with co-pro adaptor using DOS+ Problem Solver.

It corrects hardware incompatibilities (such as programmable interrupts' speed, low level keyboard scanning, etc.) and operating system's bugs, enabling the 512 board to run most of the IBM-PC programs that otherwise wouldn't run.

No more inoperative keyboards, halted computers or 'Invalid opcode errors' ... Lots of hardware dependent programs, including most good games (like Cat, Jet, Digger, ARTWORX's Strip Poker, ELECTRONIC ART's Golf, Invaders, Test Drive, Infiltrator, Quake, Yes Chancellor, Tennis, all versions of MICROSOFT's Flight Simulator, Frogger, 3D Maze, Bushido, Flightmare, Ancient Art of War, etc.) will run like in an IBM PC. DBASE III plus will now run with all versions of DOS+.

Turbo Prolog, Quick Basic 2.0, News, PC Tutor and the latest versions of Turbo C will also run correctly.

The program provides the INS, DEL, PG-UP, PG-DOWN, HOME, END and SC-LOCK keys to users who don't have the numeric keypad.

It will also allow you to switch between colour and B&W modes, change the computer's speed and save the hi-res picture on the screen, during the execution of any program.

DOS+ Problem Solver is a resident program and its operation is fully automatic.

It works with all versions of DOS+ other than the SOLIDISK's and makes no changes to your boot disk.

If you need any further informations about DOS+ Problem Solver, please contact SHIBUMI SOFT LTD.

PRICE: £25 inc. VAT, p&p, 5.25" disc & user manual

Cheques should be payable to: SHIBUMI SOFT LTD.

R. Prof. Camara Sinval, 138
4100 PORTO
PORTUGAL

UNIQUE SOLUTION

Mail order only

Have to share a printer?. But sick of manual switchers then look no further: Autoswitchers at a price you can afford. Select on a first come first serve basis and **auto-formfeed** to differentiate between each selected user.

APS2 2 BBCs to 1 printer incl.
lead and P+P £55.00

APS3 3 BBCs to 1 printer incl.
lead and P+P £75.00

Future buffer updates available!

Orders from Educational estab. are welcomed. For further details write to:

UNIQUE SOLUTION. (Dept AU)
64 Lower Addiscombe Rd.
East Croydon.
Surrey.
CRO 6AB.

ARCTIST PLUS

The easy to use, powerful, 256 colour
Archimedes art package

.....

Archimedes... Very pleasant art package... If you want a quick sketchpad approach, Arctist will more than satisfy your needs... If there is a masterpiece in you, the chances are that the package will bring it out. *PCW May 5-11 1988*

Arctist contains some excellently implemented options... Worth the price and has excellent spray feature.
Micro User May 1988

The above was on Arctist, Arctist PLUS now has even more features

As used by many schools,
hundreds of happy users, world wide

Now has Shadowing, Fonts, Magnify, Video image grab, Shaded spheres, Shaded rectangles, Replace colours, Information bar on screen & more.

amazing value at

£19.95 in VAT & p&p

from: **Fairhurst Instruments Ltd,**
Dean Court, Woodford Rd, Wilmslow,
Cheshire. SK9 2LT. (0625) 525-694.



MENTOR THE MASTER COMPATIBLE SYSTEMS THAT OFFER YOU MORE FOR YOUR MONEY

Mentor Computer systems are 100% Acorn Master 128 compatible and they are used in industry, commerce, education, research, and the home. They can be networked and have all the standard i/o ports available at the rear of the computer, and internally they will accept all co-processors, turbo board 512 board etc, plus all third party add-ons. If required Mentors can be fitted with 3 1/2 inch disc drives at no extra cost. All systems are covered by our 12 month warranty. Hard disc *****20sc will not accept a second hard disc, whereas *****20st will.

| Standard Models | No Monitor | Mono Monitor | Colour Monitor | |
|--|------------|--------------|----------------|------------|
| Model 2800 no drives | £399.00 | £474.00 | £668.00 | p&p £14.00 |
| Model 2801 one 40/80t drive | £475.00 | £550.00 | £764.00 | p&p £14.00 |
| Model 2802 two 40/80t drives | £575.00 | £650.00 | £864.00 | p&p £14.00 |
| Model 2820sc one 40/80t drive and 20 Mb wini | £895.00 | £970.00 | £1184.00 | p&p £14.00 |
| Model 2820st one 40/80t drive and 20 Mb wini | £966.00 | £1041.00 | £1255.00 | p&p £14.00 |
| Model 2840st one 40/80t drive and 40 Mb wini | £1135.00 | £1210.00 | £1424.00 | p&p £14.00 |
| Model 2860st one 40/80t drive and 60 Mb wini | £1247.00 | £1322.00 | £1536.00 | p&p £14.00 |

OAK WINCHESTER HARD DISCS

The Oak Winchester Hard Disc Subsystems are ready to plug in and use on all OAK and Acorn BBC B, B+ and Master series computers. For the BBC B, and B+ models you simply need to fit Acorn ADFS rom, if you will require to use a floppy disc with the above models you will require the Western Digital 1770 Disc controller which works in conjunction with the ADFS. The OAK Winchester hard disc subsystems are 100% compatible with the Acorn Winchester and ADFS, the Acorn Master 512 board with DOS Plus and the SJ Research file server. Drive 1 a second Winchester is available for backup or extra storage it comes complete with easy to follow fitting instructions. OAK Winchester hard disc subsystems comprise: the Winchester disc unit, case, power supply, controller and host adaptor cards, all cables, hard disc utilities and user guide, 12 MONTHS WARRANTY. PLEASE SPECIFY WHEN ORDERING FOR AN SJ RESEARCH FILESERVER.

| | | | |
|---------------|--------------------|--------------------|--------------------|
| 20Mb OAK Wini | £430.00 p&p £10.00 | 20Mb OAK Wini dr 1 | £330.00 p&p £10.00 |
| 28Mb OAK Wini | £499.00 p&p £10.00 | 28Mb OAK Wini dr 1 | £399.00 p&p £10.00 |
| 40Mb OAK Wini | £599.00 p&p £10.00 | 40Mb OAK Wini dr 1 | £499.00 p&p £10.00 |
| 56Mb OAK Wini | £659.00 p&p £10.00 | 56Mb OAK Wini dr 1 | £559.00 p&p £10.00 |
| 60Mb OAK Wini | £699.00 p&p £10.00 | 60Mb OAK Wini dr 1 | £599.00 p&p £10.00 |
| 75Mb OAK Wini | £799.00 p&p £10.00 | 75Mb OAK Wini dr 1 | £699.00 p&p £10.00 |

20Mb OAK Winchester.....£359.00 p&p £10.00
A complete hard disc subsystem its only draw back it cannot be expanded to except a second drive, ie SCSI interface. Comes complete with: s125n Winchester unit, case, power supply, host adaptor card, all cables, hard disc utilities and user guide, and 12 months warranty.

OAK DISC DRIVES FOR THE BBC COMPUTER

Oak disc drive systems comprise: Mitsubishi double sided disc drives, capable of both single and double density, 40/80 track switchable, housed in metal cases, colour matched to the BBC computer and include all cables, manual and utility disc and are covered by our 12 month warranty.

5 1/4 INCH DISC DRIVES

| | |
|--|-------------------|
| 400K Single Drive, 40/80t, double sided | £85.00 p&p £6.00 |
| 800K Dual Drives, 40/80t, double sided, (rear switches) | £165.00 p&p £8.00 |
| 800K Dual Drives, 40/80t, double sided, (front switches) | £180.00 p&p £8.00 |
| 800K Dual Drives, 40/80t, double sided, (front switches) | £215.00 p&p £8.00 |

Please enquire for details of our full range of disc drives.

SECONDHAND COMPUTERS AND BITS AND PIECES

| | |
|---|-------------------|
| Please ring for current stocks | |
| BBC model B, with DFS from | £249.00 p&p £8.00 |
| Master 128 from | £295.00 p&p £8.00 |
| All models carry a 12 month warranty | |
| New uncased 5 1/4 inch 40/80t, half height, DSDD, Mitsubishi disc drive | £67.00 p&p £5.00 |
| New uncased 3 1/2 inch one third height DSDD disc drive | £62.00 p&p £5.00 |
| 3 1/2 inch to 5 1/4 inch adaptor kit | £18.00 p&p £2.50 |
| Oak hard disc host adaptor & software ADFS compatible | £55.00 p&p £3.00 |
| Single disc drive case | £7.00 p&p £2.50 |
| Dual disc drive case with provision for rear switches | £14.00 p&p £2.75 |
| Dual disc drive case with provision for front switches and power supply | £19.50 p&p £3.25 |
| Hard disc case with provisions for PSU & FAN | £29.00 p&p £4.00 |
| Dual drive power supply for above case | £35.00 p&p £4.00 |
| Winchester hard disc power supply to fit above case | £45.00 p&p £4.00 |

OAK PROFESSIONAL SOFTWARE

| | |
|---|-------------------|
| Oak Parametric Design Tool The Worlds First Fully Interactive Parametric CAD System | £295.00 p&p £3.50 |
|---|-------------------|

OAK PROFESSIONAL SOFTWARE

THE OAK SECOND WINCHESTER HARD DISC FOR THE ARCHIMEDES

| | |
|--------------------|--------------------|
| 20Mb OAK Wini Dr 5 | £399.00 p&p £10.00 |
| 40Mb OAK Wini Dr 5 | £535.00 p&p £10.00 |
| 60Mb OAK Wini Dr 5 | £795.00 p&p £10.00 |

20 & 40 Mb Winis available with 5 1/4 inch floppy disc drive add £149.00 (includes interface)

MULTISYNC MONITOR

| | |
|---|---------------------|
| Oak 20 inch multisync colour monitor for Archimedes | £1899.00 p&p £14.00 |
|---|---------------------|

BBC B AND BBC B PLUS SPARES

| | |
|---------------------------|------------------|
| Keyboard | £25.00 p&p £3.50 |
| Power supply | £38.00 p&p £3.50 |
| Plastic case | £12.00 p&p £3.00 |
| 17 way keyboard connector | £1.00 p&p £0.50 |
| Plastic key strip | £2.00 p&p £1.00 |
| Speaker grille | £1.00 p&p £0.50 |
| Speaker assembly | £2.75 p&p £0.50 |

MASTER SPARES

| | |
|------------------|-------------------|
| Keyboard | £56.00 p&p £3.50 |
| Motherboard | £246.00 p&p £3.50 |
| Power supply | £51.00 p&p £3.50 |
| Speaker assembly | £2.75 p&p £0.50 |
| Battery pack | £2.75 p&p £0.50 |

EDUCATION AND VOLUME DISCOUNTS AVAILABLE

MONEY BACK GUARANTEE If you are not completely satisfied (Goods are returned by insured parcel post, postage paid, goods should be in as new condition and returned within 10 working days). PRICES EXCLUDE VAT U.K. Customers please add 15% to Total cost + p&p).

LOCAL GOVERNMENT, GOVERNMENT AND EDUCATION AUTHORITY ORDERS ACCEPTED



OAK COMPUTERS, CROSS PARK HOUSE, LOW GREEN, RAWDON, LEEDS LS19 6HA. TEL: (0532) 502615
TLX: 51311 RELAYS G.

NIDD VALLEY

Mouse Software

DISC BASED COLOUR GRAPHICS

4 packages in 1 for the BBC B/B+ Master 128

ILLUSTRATOR COLOURBOX

Create high resolution graphics and combine at the printer with any word-processor text. Produce illustrations with your own design of icons and fonts.

Easy to use, Mode 1 drawing and painting program. Features dual speed mouse control, plus monochrome and Integrex colour print dumps.

PLUS FREE!

CHAUFFEUR to add mouse control to software written for the keyboard AND FREE! **GRAFIK** for colour design in modes 0,1,2,4 or 5.

DIGIMOUSE

High quality, reliable mouse with unique lock feature for drawing perfectly straight lines. Full 12 month warranty.

HOW TO ORDER

Cheque/PO, or telephone with ACCESS or VISA number.
Prices include VAT & Post.
Educational orders accepted.



NIDD VALLEY

MICRO PRODUCTS LTD

Dept AU1/89
FREEPOST WETHERBY WEST YORKSHIRE LS23 7YP
Telephone: Boston Spa (0937) 844661

SPECIAL PRICES
Until 31 January

All 4 packages & mouse

£49.90

(usually £79.90) Inc. VAT

Software only: £29.90

Mouse only: £29.90

SQUIRREL SOFTWARE

Programs on Disc for BBC B, B+, Compact and Master



The CARES DISK comprising all four Cares utilities - £29.95.

INVESTMENT CARE PLUS

Keeps track of all UNIT TRUSTS, SHARES etc. Produces displays & printouts of Capital Gains, Dividends, Current Holdings valuations showing Quantities, Bid/Offer prices, Values, Gains/Losses, APR, HiVal %, etc. and a 3D BAR CHART program with a disc search procedure to collect past data.

CASH CARE

Bank account AND Savings account. Full Analysis - 60 categories. Budget Forecasts. 3-D Bar Charts. Password Protection. Easy storage of data. Printouts of all accounts and Bar Charts.

BUILDING SOCIETY CARE

Checks the complex interest calculations involved on a day to day basis. Shows interest earned to date. Spreadsheet display. Easy storage of data. Printout of account to date.

VAT CARE

225 Sales AND 225 Purchases each month (BBC). Three month period. ALERT warning if VAT 2% or more incorrect. Easy storage of data. Printout with month & 3 monthly totals.

TV DIRECTOR - popular in schools and colleges

£14.95

Make your own video without cameras!

THE GAMES DISK COMPILATION OF GAMES PROGRAMMES

Supergolf - Trafalgar - Polar Perils - Bunfun

£14.95

PROGRAMS FOR ARCHIMEDES

THE CARES DISK - improved version of above

£34.95

SUPERGOLF - re-written especially

£12.95

WORD SQUARE - crossword compiler with a 72000 + wordbank - can complete a 15x15 square in less than 60 seconds! Full printout facilities to produce professional looking crosswords

£36.95

PLEASE FORWARD ME..... 40TK ☐ 80TK ☐ 3 1/2 ☐

I HAVE A BBC-B ☐ BBC B+ ☐ COMPACT ☐ ARCHIMEDES ☐

DEBIT MY ACCESS CARD NO.....

OR ENCLOSED £..... SIGNATURE.....

ADDRESS.....

Dept AU1, 4 Bindloss Avenue, Eccles, Manchester M30 0DU
Please phone 061-789 4120 for brochure

Computer survey

Acorn User is conducting a survey of the use to which computers are being put in our schools and colleges. The results are likely to be of interest not only to our readers but also to hardware manufacturers and software publishers. Please help us to obtain a 'broad perspective of educational computing by completing the survey. If you wish to preserve your magazine then simply photocopy the questionnaire. Pass on copies to colleagues who want to contribute.

Throughout the questionnaire please tick the relevant box or add further details where a line indicates the need for additional information.

Thank you in advance for your help!

YOUR SCHOOL OR COLLEGE

1. In which type of institution do you work?

- ☐ Infant school
- ☐ Junior/Middle school
- ☐ Secondary school 11(12)-16
- ☐ Secondary school 11(12)-18
- ☐ Sixth form college
- ☐ FE college
- ☐ HE college
- ☐ University
- ☐ Other _____

2. Number of students _____

3. Number of teaching staff _____

4. Which types of computers are there in your establishment, and how many?

- | | |
|--|--------------------------------------|
| <input type="checkbox"/> Acorn | <input type="checkbox"/> Atari |
| <input type="checkbox"/> Research Machines | <input type="checkbox"/> IBM/clones |
| <input type="checkbox"/> Apple | <input type="checkbox"/> Other _____ |
| <input type="checkbox"/> Commodore | |

5. Does your institution run a network?

- ☐ Yes ☐ No

YOUR SOFTWARE

6. Place the following in order of most frequent use:

- ☐ Wordprocessing
- ☐ Database
- ☐ Spreadsheet
- ☐ Graphics/Art/Design
- ☐ Desktop publishing
- ☐ Other _____

7. Of which software publisher's products have you purchased the most copies in the past two years?

8. For IT co-ordinators only: of the software you have purchased, please indicate rough percentages, first for

subject areas, and secondly software types:

- | | |
|---|---|
| <input type="checkbox"/> Humanities | <input type="checkbox"/> Generic productivity tools |
| <input type="checkbox"/> Languages (inc. English) | <input type="checkbox"/> Simulations |
| <input type="checkbox"/> Business Studies/Economics | <input type="checkbox"/> Teaching programs (drill & practice) |
| <input type="checkbox"/> CDT/Art | <input type="checkbox"/> Revision software |
| <input type="checkbox"/> Music/Performing arts | <input type="checkbox"/> Problem-solving/Adventure |
| <input type="checkbox"/> Maths | <input type="checkbox"/> Control/Sensing/Monitoring software |
| <input type="checkbox"/> Science | <input type="checkbox"/> Computer languages/utilities |
| <input type="checkbox"/> Administration | |
| <input type="checkbox"/> Computer Studies | |
| <input type="checkbox"/> Other _____ | |

9. How many software packages do you have available?

10. Please estimate how many of these you use:

Frequently _____

Occasionally _____

Rarely _____

16/32-BIT SYSTEMS

11. From the range of software available for the new 16/32-bit machines (Archimedes, Nimbus, Macintosh etc) which specific software packages will have most impact *educationally* in your institution?

12. If you had £2000 to spend, would you buy:

- ☐ 8 Cambridge Computer Z88s
- ☐ 3 BBC Masters with disc drive and colour monitors
- ☐ 2 Archimedes with colour monitor
- ☐ Other (please specify) _____

13. Do you see your present computer resources being replaced by 16/32-bit machines in the next few years? If so, on which computer will you standardise?

14. If not, into which curriculum areas would you target 16/32-bit machines that you do receive?

- ☐ Humanities
- ☐ Languages (inc English)
- ☐ Business studies/economics
- ☐ CDT/Art
- ☐ Music/Performing arts
- ☐ Maths
- ☐ Science
- ☐ Administration
- ☐ Other _____

Send your completed questionnaire to Education News, BBC Acorn User, 20-26 Brunswick Place, London N1 6DJ before February 28 1989.



Crisp Printing

Now here's some food for thought ... The Micro P. range of dot matrix printers offers crisp printing performance at unbelievably competitive prices and is ideal for cost conscious users with a real appetite for work.

There is a whole range to choose from to suit all tastes, ranging from the snappy 135cps MP135+, the 240cps MP200+, pictured above, with optional font cards, through to the gluttonous line printer, the 700cps MP700.

Whilst we won't promise to include a little blue bag of salt, the

Micro P. range of printers will produce some very appetising printout, at prices any user will relish!



**Micro
Peripherals Ltd**

Intec 2, Unit 3, Wade Road, Basingstoke,
Hampshire RG24 ONE. Tel: (0256) 473232
Telex: 859669 MICROP G.
Facsimile: (0256) 461570.

1 Petre Road, Clayton Park, Clayton-le-moors,
Accrington, Lancashire. Tel: (0254) 871717
Tel: (0706) 217799.
Telex: 635153 MICROP G.
Facsimile: (0254) 653153.



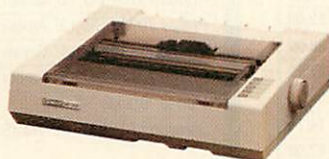
MP135+

A low cost high performance printer using latest technology to produce print that makes draft quality look like NLQ.
Speed: 135 cps draft, 27 NLQ.
Columns: 80
Compatibility: IBM/Epson
Price: £125 RRP



MP165+

This new styled NLQ printer offers the user the very best in low cost matrix printing.
Speed: 190cps draft, 32cps NLQ.
Columns: 80
Compatibility: IBM/Epson.
Price: £189 RRP



MP200+

This 80 column, 40cps, NLQ printer offers the best value in the market place. You can't buy better. A range of font cards are available.
Speed: 240cps draft, 40cps NLQ. Columns: 80.
Compatibility: IBM/Epson.
Price: £299 RRP



MP480

This fast, high performance line printer is a unique buy, which combined with its outstanding capabilities makes it a real winner.
Speed: 480cps draft, 74cps NLQ. Columns: 80.
Compatibility: IBM/Epson.
Price: £329 RRP



MP700

This top of the range new styled line printer offers exceptional value for money and is well established in today's printer market.
Speed: 700cps/252 lines per minute.
Columns: 136.
Compatibility: IBM/Epson.
Price: £419 RRP

**24 HOURS
ANSWERPHONE
FOR CREDIT CARD
ORDERS
0480 59026**

**PEARTREE
DRAIN
LTD**

**24 HOURS
ANSWERPHONE
FOR CREDIT CARD
ORDERS
0480 59026**

Peartree House, No 1 Blackstone Road, Stukeley Meadows Industrial Estate, Huntingdon, Cambs PE18 6EF. Telephone (0480) 50595 Fax (0480) 59026

Archimedes HARDWARE

305 SERIES

| | |
|-----------------------|----------|
| * Entry System | £ 679.00 |
| * With Green Monitor | £ 729.00 |
| * With Colour Monitor | £ 879.00 |

310 SERIES

| | |
|-----------------------|----------|
| * Entry System | £ 749.00 |
| * With Green Monitor | £ 810.00 |
| * With Colour Monitor | £ 999.00 |

310M SERIES

| | |
|-----------------------|----------|
| * Entry System | £ 849.00 |
| * With Green Monitor | £ 910.00 |
| * With Colour Monitor | £1099.00 |

440 SERIES

| | |
|-----------------------|----------|
| * Entry System | £2265.00 |
| * With Green Monitor | £2310.00 |
| * With Colour Monitor | £2455.00 |

Acorn
The choice of experience.

MASTER SERIES

* **BBC MASTER 128 £349.00**

BBC MASTER COMPACT SERIES

| | |
|--------------------------------|----------|
| * Master Compact Entry System | £ 310.00 |
| * Master Compact TV System | £ 322.00 |
| * Master Compact Mono System | £ 365.00 |
| * Master Compact Colour System | £ 475.00 |

PERIPHERALS

| | |
|--------------------------------|----------|
| * Acorn Econet Starter Kit | £ 79.00 |
| * Acorn Econet Socket Kit | £ 29.00 |
| * Acorn Master Econet Module | £ 43.00 |
| * Acorn Filestore E01 | £ 819.00 |
| * Acorn Filestore E20 | £ 709.00 |
| * Acorn Econet Station Lead 10 | £ 25.00 |
| * Acorn Econet Cable 100m | £ 99.00 |
| * Acorn Master Turbo Upgrade | £ 99.00 |
| * Acorn 1770 DFS Complete Kit | £ 49.00 |
| * Acorn 64k Upgrade Kit | £ 27.00 |
| * Acorn 32016 Co-Processor | £ 899.00 |

COMPATIBLE MICE

| | |
|-------------|---------|
| * AMX Mouse | £ 29.95 |
| * Digimouse | £ 39.95 |

MODEM FOR ACORN COMPUTERS

| | |
|--------------------------|----------|
| * Pace Nightingale | £ 99.00 |
| * Pace Nightingale Combo | £ 129.00 |
| * Pace Linet Modem | £ 142.00 |
| * WS2000 | £ 113.00 |
| * WS3000 V21/23 | £ 285.00 |
| * WS4000 | £ 159.00 |
| * Pace Series4 V/21/22 | £ 360.00 |

CONSUMABLES FOR ACORN COMPUTERS

| | |
|-----------------------------------|---------|
| * BBC Master Dust Cover | £ 4.50 |
| * BBC Master Compact D/Cover Mono | £ 7.50 |
| * BBC Master Compact D/Cover Col | £ 8.75 |
| * BBC Model B Dust Cover | £ 4.50 |
| * Eprom Eraser | £ 39.95 |
| * Eprom Programmer Up to 64k | £ 69.95 |

BOOKS (No VAT)

| | |
|----------------------------------|---------|
| * BBC User Guide | £ 14.95 |
| * BBC Master Ref Part I | £ 14.95 |
| * BBC Master Ref Part II | £ 14.95 |
| * Acornsoft View Manual | £ 10.00 |
| * Acornsoft Viewsheets Manual | £ 10.00 |
| * Acornsoft Viewstore Manual | £ 10.00 |
| * Acornsoft DFS Operating Manual | £ 6.95 |
| * Advance Sideways RAM User | £ 9.95 |
| * BBC Advance User Guide | £ 16.95 |
| * Master Advance Ref Guide | £ 17.95 |

DISC DRIVE FOR ACORN COMPUTERS

| | |
|---------------------------------|----------|
| * Single Drive 400k 40/80 | £ 99.00 |
| * Single Drive 400k 40/80 + PSU | £ 119.00 |
| * Dual Drive 800k 40/80 | £ 199.00 |
| * Dual Drive 800k 40/80 + PSU | £ 229.00 |
| * BBC Master Bridge Drive 800k | £ 249.00 |
| * BBC 20MB + 400k Drive | £ 799.00 |
| * BBC 20MB Hard Disk Drive | £ 699.00 |

SPREADSHEETS

| | |
|--------------------------------------|---------|
| * Acornsoft Viewsheets | £ 36.00 |
| * Acornsoft Viewplot | £ 22.00 |
| * C.C. Intersheet | £ 38.00 |
| * C.C. Interchart | £ 27.00 |
| * Mini Office II Disk Version | |
| * For Model B & B+ 40t or 80t | £ 14.75 |
| * For Model Master 128k 80t | £ 17.00 |
| * For Master Compact 3.5" Disk | £ 19.00 |
| * Mini Office II ROM Version | |
| * For B, B+ Master & Compact | £ 48.00 |
| * C.C. The Mega 3 ROM | £ 77.00 |

CAD & DRAWING SOFTWARES

| | |
|----------------------------|---------|
| * AMX Mouse & Superart | £ 59.00 |
| * AMX Superart Only | £ 43.00 |
| * AMX Desk | £ 19.00 |
| * AMX Utilities | £ 11.50 |
| * AMX Pagemaker Stop Press | £ 43.00 |
| * AMX 3D Zicon | £ 21.00 |
| * AMX Database | £ 21.00 |
| * AMX XAM | £ 21.00 |
| * AMX MAM | £ 17.00 |

UTILITIES

| | |
|--------------------------------|---------|
| * Acornsoft ADFS ROM | £ 26.00 |
| * Acornsoft Printer Server ROM | £ 39.00 |
| * Acornsoft Basic Editor | £ 24.00 |
| * Acornsoft Termulator | £ 29.00 |

DATABASE MANAGEMENT SYSTEMS

| | |
|-----------------------|---------|
| * Acornsoft Viewstore | £ 37.00 |
| * Acornsoft Overview | £ 77.00 |
| * C.C. Interbase | £ 55.00 |

WORD PROCESSORS

| | |
|---------------------------------|---------|
| * Acornsoft View Professional | £ 76.00 |
| * Acornsoft View 3 | £ 44.00 |
| * Acornsoft Viewindex | £ 13.00 |
| * Acornsoft View Printer D/Gen. | £ 9.00 |
| * Acornsoft Viewspell | £ 29.00 |
| * C.C. Wordwise Plus | £ 38.00 |
| * C.C. Interword | £ 39.00 |
| * C.C. Spellmaster | £ 47.00 |

MONOCHROME MONITORS

| | |
|------------------------------------|----------|
| * Philips 7502 Green Monitor | £ 73.00 |
| * Philips 7913 FSQ 12" Green | £ 89.00 |
| * Philips 7923 FSQ 12" Amber | £ 99.00 |
| * Philips 7713 FSQ 14" Green | £ 103.00 |
| * Philips 7723 FSQ 14" Amber | £ 107.00 |
| * Monitor Stands Tilt/SW | £ 15.00 |
| * Samsung F12AA7 12" Flat/Sc Amber | £ 79.00 |
| * Samsung F39A7 12" Flat/Sc Green | £ 79.00 |
| * Samsung M430 14" Amber | £ 89.00 |
| * Samsung M430 14" Green | £ 89.00 |

COLOUR MONITORS

| | |
|----------------------------------|----------|
| * Philips 8801 Monitor | £ 189.00 |
| * Philips 8802 Monitor | £ 199.00 |
| * Philips 9053 Monitor | £ 379.00 |
| * Philips 9073 Monitor | £ 449.00 |
| * Philips 8833 Monitor | £ 259.00 |
| * Philips 8852 Monitor | £ 269.00 |
| * Microvitec 1431/MS 14" St/Res | £ 199.00 |
| * Microvitec 1431/DS 14" St/Res | £ 199.00 |
| * Microvitec 1431/MZ 14" St/Res | £ 239.00 |
| * Microvitec 1451/MS 14" Med/Res | £ 249.00 |
| * Microvitec 1451/DS 14" Med/Res | £ 249.00 |
| * Microvitec 1441/MS 14" H/Res | £ 439.00 |
| * Microvitec 1441/DS 14" H/Res | £ 439.00 |
| * Hantarex M/Res 28" | £ 795.00 |
| * Kaga Taxan Sup/770 Multisync | £ 599.00 |
| * Samsung C452 St/Res 14" T&SV | £ 179.00 |
| * Samsung C1412 Med/Res 14" T&SV | £ 269.00 |
| * Samsung C1414 H/Res 14" T&SV | £ 349.00 |
| * Samsung C431V Med/Res 14" T&SV | £ 299.00 |
| * Samsung C431E Med/Res 14" T&SV | £ 299.00 |

EPSON

PRINTERS

| | |
|----------------------------------|----------|
| * Epson LX800 Printer | £ 199.00 |
| * Epson LX800 Sheet Feeder | £ 69.00 |
| * Epson FX800 Printer | £ 399.00 |
| * Epson FX800 Sheet Feeder | £ 139.00 |
| * Epson FX1000 Printer | £ 499.00 |
| * Epson FX1000 Sheet Feeder | £ 159.00 |
| * Epson EX800 Printer | £ 499.00 |
| * Epson EX800 Scanner Option | £ 169.00 |
| * Epson EX800 Sheet Feeder | £ 139.00 |
| * Epson EX800 Colour Option | £ 60.00 |
| * Epson EX1000 Dual Interface | £ 699.00 |
| * Epson EX1000 Sheet Feeder | £ 179.00 |
| * Epson EX1000 Sheet Feeder | £ 179.00 |
| * Epson EX1000 Dual Sheet Feeder | £ 299.00 |
| * Epson EX1000 Colour Option | £ 60.00 |
| * Epson EX1000 Scanner Option | £ 179.00 |

24 PIN DOT MATRIX

| | |
|------------------------------------|----------|
| * Epson LQ500 Printer | £ 379.00 |
| * Epson LQ500 Sheet Feeder | £ 75.00 |
| * Epson LQ850 Printer | £ 599.00 |
| * Epson LQ850 Sheet Feeder | £ 139.00 |
| * Epson LQ1050 Printer | £ 799.00 |
| * Epson LQ1050 Sheet Feeder | £ 179.00 |
| * Epson LQ2500 Printer | £ 999.00 |
| * Epson LQ2500 Single Sheet Feeder | £ 179.00 |
| * Epson LQ2500 Dual Sheet Feeder | £ 299.00 |
| * Epson LQ2500 Colour Option | £ 66.00 |
| * Epson LQ2500 Scanner Option | £ 190.00 |

All prices are exclusive of VAT

Registered in England · Registered No. 2256150 · 6 Rother Street, Stratford-Upon-Avon

PUTTING · THE · FUTURE · INTO · YOUR · HANDS

PEARTREE DRAM LTD

**24 HOURS
ANSWERPHONE
FOR CREDIT CARD
ORDERS
0480 59026**

**24 HOURS
ANSWERPHONE
FOR CREDIT CARD
ORDERS
0480 59026**

Peartree House, No 1 Blackstone Road, Stukeley Meadows Industrial Estate, Huntingdon, Cambs PE18 6EF. Telephone (0480) 50595 Fax (0480) 59026

MP MicroPeripherals Ltd

PRINTERS

| | |
|---------------------------------|----------|
| * MP135 80col 135cps F+T & NLQ | £ 124.00 |
| * MP135+ 80col 135cps F+T & NLQ | £ 134.00 |
| * MP135 Cut Sheet Feeder | £ 149.00 |
| * MP165+ 80col 156cps F+T & NLQ | £ 169.00 |
| * MP165 Cut Sheet Feeder | £ 89.00 |
| * MP480 80col 480cps F+T & NLQ | £ 319.00 |
| * MP700 136col 700cps F+T & NLQ | £ 449.00 |

DAISYWHEEL PRINTERS

| | |
|----------------------------------|----------|
| * Juki 6000 Daisy Wheel Parallel | £ 179.00 |
| * Juki 6000 Daisy Wheel Serial | £ 179.00 |
| * Juki 6100 Daisy Wheel | £ 299.00 |
| * Juki 6100 Sheet Feeder | £ 159.00 |
| * Juki 6200 Daisy Wheel Parallel | £ 429.00 |
| * Juki 6300 Daisy Wheel Parallel | £ 699.00 |
| * Juki 6300 Daisy Wheel Serial | £ 699.00 |
| * Juki 6500 Daisy Wheel Par/Ser | £ 899.00 |
| * Micro P MP26 Daisy Wheel | £ 239.00 |
| * Micro P MP40 Daisy Wheel | £ 299.00 |
| * Panasonic P3131 Daisy Wheel | £ 299.00 |
| * Panasonic P3151 Daisy Wheel | £ 499.00 |

PANASONIC PRINTERS

| | |
|-----------------------------------|----------|
| * Panasonic 1081 120cps 28cps NLQ | £ 147.00 |
| * Panasonic 1082 160cps 35cps NLQ | £ 179.00 |
| * Panasonic 1083 240cps 48cps NLQ | £ 299.00 |
| * Panasonic 1592 136col 180cps | £ 359.00 |
| * Panasonic 1595 136col 240cps | £ 429.00 |
| * Panasonic KXP1540 24pin 240cps | £ 599.00 |

DISKS 5¼ & 3½

| | |
|---|---------|
| * Box of 10 5.25 Disks With Library Case DS/DD 96tpi Hub Ring | £ 9.95 |
| * Box of 10 3.5 Disks With Library Case DS/DD 135tpi | £ 15.95 |

**CALL FOR ALL ACORN
MAJOR SPARES WE
CARRY MANY OTHER
ITEMS IN STOCK**

PRINTER RIBBONS

| | |
|-----------------------|---------|
| * FX80/85 MP165 | £ 4.95 |
| * LX80/86 | £ 4.50 |
| * LX800 | £ 7.95 |
| * Canon Kaga | £ 5.95 |
| * Epson FX100/RX100 | £ 7.95 |
| * Epson FX105 | £ 9.95 |
| * Epson LQ800 | £ 11.95 |
| * Epson LQ1000 | £ 11.95 |
| * Epson FX1000 | £ 7.95 |
| * Juki 6100 | £ 6.95 |
| * Panasonic 1081 | £ 6.95 |
| * Epson EX800 Colour | £ 16.00 |
| * Epson EX1000 Colour | £ 16.00 |
| * CPA-80 Ribbon | £ 3.95 |

PEARTREE PRODUCTS

| | |
|--|---------|
| * MR5000 Master ROM Cartridge Allows 2 ROMS To Be Fitted | £ 8.95 |
| * MR6000 Master ROM Cartridge Allows 4 ROMS To Be Fitted | £ 11.95 |
| * MR7200 Master RAM Cartridge 32k W/P Sideways Cartridge | £ 33.95 |
| * MR8000 Master RAM Cartridge 64k Battery Backed S/Ways RAM | £ 49.95 |
| * MR3000 Mini ROM Board BBC B Only Extension of 4 ROMS in the BBC | £ 15.95 |
| * MR4300 Mini ROM/RAM Board BBC B 32k S/Ways + 3 ROM Sockets | £ 39.95 |
| * MR4800 Mini RAM Board BBC B Only 128k Battery Backed S/Ways | £ 89.95 |

LEADS & PRINTER CABLES

| | |
|-----------------------------------|---------|
| * BBC to TV Lead | £ 1.25 |
| * BBC to Green Monitor Lead | £ 2.95 |
| * BBC to Sony/Kaga Colour Lead | £ 5.95 |
| * BBC to Microvitec Lead | £ 2.25 |
| * Phono to Phono Lead | £ 1.25 |
| * BNC to BNC Lead | £ 2.95 |
| * BBC to Cassette Lead | £ 2.25 |
| * BBC to Acorn Cassette Lead | £ 2.25 |
| * BBC to Centronics Lead | £ 9.95 |
| * BBC to Serial Printer Lead | £ 9.95 |
| * 4 Way Main AC Trailing Lead | £ 9.50 |
| * BBC Pace Modem Lead | £ 4.95 |
| * Master Compact Printer Lead | £ 15.95 |
| * Centronics to Centronics Lead | £ 14.95 |
| * BBC to Philips Col Monitor Lead | £ 4.95 |
| * BBC RGB Hantarex Lead | £ 9.95 |

COMPONENTS SPARES ROMS & RAMS

| | |
|----------------------------------|---------|
| * EPROMS 27128 16k EPROMS | £ 5.25 |
| * EPROMS 27256 32k EPROMS | £ 5.25 |
| * EPROMS 27512 64k EPROMS | £ 10.50 |
| ** Intel 8271 FDC | £ 49.00 |
| ** Intel 8271 FDC + Complete Kit | £ 59.00 |
| **D-RAMS** | |
| * 4164-15 | £ 2.75 |
| * 4164-12 | £ 3.00 |
| * 41256-15 | £ 8.75 |
| * 41256-12 | £ 9.75 |
| * 6264LP-8k Static RAM | £ 8.75 |
| * 65256LP-32k Static RAM | £ 11.75 |
| ** 6502 Range | |
| * 6502A | £ 4.95 |
| * 65C02 | £ 9.50 |
| * 65C12 | £ 9.00 |
| * 6512A | £ 9.95 |
| * 6522A | £ 4.50 |

IBM COMPATIBLE ADD-ON CARDS

| | |
|---|---------|
| * Mini Floppy Disk Drive Card For 2 Internal & 2 External For PC/XT Compatible | £ 39.00 |
| * Floppy Disk Drive Adapter Card Drives 360K and 1.2 MBytes FDD + Cables PC/XT | £ 59.00 |
| * Floppy Hard Disk Adapter Card PC AT Compatible Allowing up to 2FDD + 2HDD Complete with cables | £149.00 |
| * Mono Graphic/Printer Card PC AT/XT Fully Hercules Compatible 720 x 348 Res. | £ 69.00 |
| * Colour Graphic/Printer Card IBM CGA Compatible PC/XT TTL Composite Video Output 640 x 200 with 2 Colours 320 x 200 with 4 Colours | £ 58.00 |
| * Enhanced Graphics Adapter Card Fully IBM, EGA, CGA, Hercules + MDA Compatible PC XT/AT 8 Display Modes 640 x 350 Res. 256K D/Mem | £189.00 |
| * RAM CARDS Unpopulated PC/AT 128K RAM CARD | £ 79.00 |
| 576K RAM CARD | £ 79.00 |
| 2 MByte RAM CARD XT | £109.00 |
| 2 MByte RAM CARD AT | £159.00 |
| 2.5 MByte RAM CARD PC/AT | £ 89.00 |
| * Multi I/O/Video/FDC Card PC XT Compatible TTL, CGA RS232 Clock Calander Parallel Printer Port 2 x FDC Light Pen Interface 16K Screen Buffer | £129.00 |
| * RS232 Interface Card PC XT | £ 29.00 |
| 1 RS232 Port Option for 2 Port | £ 42.00 |
| * IEEE Standard 448 1978 Card PC XT/AT Compatible Fully GPIB Compatible Complete With Manual Testing Cable + Connector | £169.00 |

THIS MONTH'S SUPER DEAL



Mitsubishi 5.25" Floppy Drive
40 Track Double Sided 200K Drive. Ready to
plug into your BBC, BBC+ and The Master
128 Computer.

At a Special Price A Super Deal and a Super
Value for only £66.00 plus Courier Delivery,
plus VAT

***** £83.95 *****

All Inclusive to Your Doorstep

MUSIC 500

**SPECIAL REDUCED
PRICE
£29.95**

**only from
PEARTREE DRAM LTD**

You may purchase any of the items listed, by cheque made payable to: **PEARTREE DRAM LTD.**

All you have to do is list your requirements on a sheet of paper, post it to us quoting ref, and we will despatch your goods within 7 days, whenever possible.

Please add the following amounts for postage and packing:

| | |
|---------------------|------------|
| Items below £10.00 | add £1.50 |
| Items below £50.00 | add £2.50 |
| Items below £100.00 | add £3.50 |
| Items above £100.00 | add £10.00 |

Independent courier for items over £100.00

All prices exclude VAT.

Visa, Access, Barclaycard, Mastercharge card holders - call us on our new special line:
(0480) 50595

Prices are correct at time of going to press. Peartree Dram reserves the right to change prices without prior notice.

All prices are exclusive of VAT

Registered in England · Registered No. 2256150 · 6 Rother Street, Stratford-Upon-Avon

NOW WITH STOP PRESS, EVERYONE CAN HOLD THE FRONT PAGE NEWS.

STOP PRESS

'STOP PRESS' is the ideal DeskTop Publishing program for home enthusiasts, schools, societies and small businesses. 'STOP PRESS' makes it simple to

create professional newsletters, leaflets, forms and flyers, in fact anything where text and graphics are required — placing you right at the heart of the DeskTop Publishing Revolution.

Text can be entered from within 'STOP PRESS' or imported from your word processor with fully automatic on screen text formatting including centering, ragged right and literal justification.

The graphics capabilities of 'STOP PRESS' are equally versatile. The ability to import digitised and scanned images is complimented by facilities for drawing spraying and painting.

Enhanced cut and paste facilities replace traditional methods (no scissors and glue supplied or required).

'STOP PRESS' includes an excellent zoom facility for adding those finishing touches before your work is output to a wide range of Epson compatible dot matrix printers.



EXTRA, EXTRA

typefaces covering a variety of subjects and styles.

Extra, Extra is a collection of instant clip art and new

LET'S LEAVE THE LAST WORD TO THE PRESS...

"the most comprehensive in its field... very high quality printouts are possible"

Amstrad Action

"the best graphics available in a DTP package"

8000 Plus

"exceptionally useful... the manual was hardly necessary"

Commodore Computing International

"it's phenomenal... this product is worth every penny"

Educational Computing

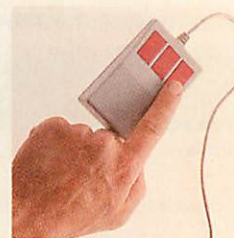
"one of the most professional packages I've seen... all I can say is go out and buy it"

A&B Computing

AMX MOUSE

Stop Press can be used with a joystick or keyboard but the AMX Mouse gives you the control and flexibility which you would expect from the most accurate pointing device available.

Established as the market leader the AMX Mouse has been the driving force behind a whole host of new applications from other software houses. With its unique design and high resolution movement the AMX Mouse is a must.



| 'STOP PRESS' IS AVAILABLE FOR | SOFTWARE ONLY | WITH AMX MK. 111 MOUSE | EXTRA! EXTRA! |
|-------------------------------|---------------|------------------------|---------------|
| ACORN BBC/B + /MASTER | £49.99 | £79.99 | £24.99 |
| AMSTRAD PCW 8256/8512 | £49.99 | £89.99 | — |
| AMSTRAD CPC 6128 | £49.99 | £79.99 | £24.99 |
| COMMODORE 64/128 | £39.99 | £69.99 | — |

These products are available from all good computer dealers or freepost direct by cheque, Access or Visa. All prices include VAT, postage and packing. Become your own publishing baron with 'Stop Press' and start the presses rolling.

AMS

ADVANCED MEMORY SYSTEMS



166-170 WILDERSPOOL CAUSEWAY, WARRINGTON, CHESHIRE, WA4 6QA



FOR INSTANT ACCESS OR VISA ORDERS TEL: (0925) 413501 · DEALER ENQUIRIES WELCOME TEL: (0525) 222211

Technology goes on the buses

BBC Soft's *Technology and Design* package is a multi-media set of materials to help develop design topics in CDT classes in top junior through to upper secondary classes. The original was reviewed in *Acorn User* and now *Part 2* has been released for £21.70 plus VAT.

The new materials build on the first pack, but are totally software based. Three programs deal with the management and timetabling of a bus company in a large town; the principles of sorting and selecting; and the design of packaging.

In *The Bus Game*, each turn represents one month's trading and during that time the player must design routes and services to improve the trading position. Data for the simulation was supplied by the Transport and Road Research Laboratory.

Adventure of Sorts uses real data about students to tackle obstacles in an adventure. So, for instance the slimmer members of the class may squeeze through narrow tunnels while the more athletic are able to jump over chasms!

The software includes a data sorter which allows pupils to categorise members of the class according to various physical characteristics and choose the most appropriate members for the adventure. Curriculum materials are provided to help the teacher organise the use of the software in a number of different circumstances.

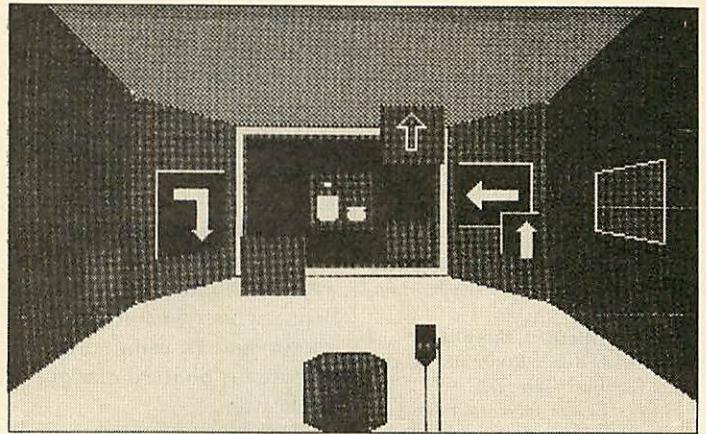
Pack-It, involves choosing materials, design, and minimising wastage to keep production costs low. Another element is stacking the design, calling for an understanding of tessellation of different shapes.

ACORN USER JANUARY 1989

Screen dumping made simple

Teachers and students often need printed copies of screens from the software they are running. ESM's *Screenprint* is possibly the simplest and most straightforward means of obtaining an immediate hard copy of a particular screen.

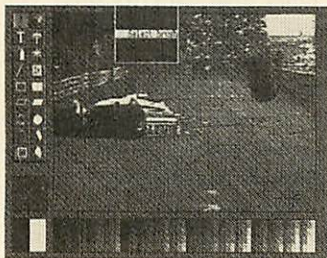
The new colour version of the ROM allows programs to be interrupted at any time, and the screen dumped to a black and white Epson-compatible printer or to one of two types of colour device. *Screenprint* is always available, unless disabled with a star command. Its four simple commands can be included in your programs to obtain the same effect, and it works on the BBC model B, B+, Master 128 and Compact.



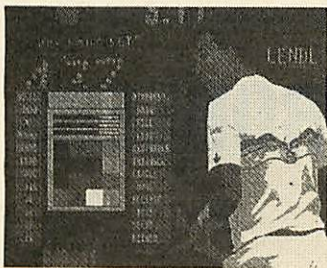
Worlds Without Words saved on an Integrex

Two versions are available, one for colour inkjet printers (Integrex and Canon) the other for colour dot-matrix printers (Juki, Star and Epson JX compatible). Each version is identical in use to the monochrome original, and each

supports black and white printers in the same way as the original ROM. Although it is not as versatile as *Snatch* from 4Mation, *Colour Screenprint* scores by being so simple to use and not needing sideways RAM. Chris Drage



Pax above, Leonardo below



Cut-price Arc Art

Of the dozen art packages for the Archimedes, two, *Pax* and *Leonardo*, are relatively cheap.

The £15.95 *Pax* from Z&Z Software was written by Julian Rockey (of *Quazar* fame). It works in mode 15 (640 by 256 pixels with 256 colours) with the actual drawing screen 'clipped' in a window.

Any graphics screen can be imported using an automatic conversion routine.

The usual draw commands are available, plus three others:

Rotate allows a rectangular area to be copied and rotated; Distort stretches a rectangle into any quadrilateral; Squeeze maps an area into a circle.

Leonardo works in mode 12 (640 by 256 with 16 colours). It has some nice features such as five levels of magnification. Importantly, all the drawing features will work at any level, so you can spray very small areas, or draw tiny circles etc. The other features are pretty standard at £17.50.

Power for font users

Wordpower is a BBC word-processor, which has been continually developed over the past two years. It has built up quite a following in education circles, mainly because it will run on virtually every kind of Acorn equipment from Electron to Archimedes.

The latest version number

four offers a major new feature called 'Power fonts' where 11 add on packs each offer at least seven different languages for £19. As well as the normal French, German and Spanish the vast array includes Albanian, Czech and Ukranian. Three others provide maths, physics, or chemistry symbols. Multi-line statistical equations are of tremendous quality on screen and on paper. Excellent value at £36.

Тянь-Шаня и потом ве

FONT M1 (Mathematics)

0123456789 / abcdefghi

$$x^4 - 2\sqrt{x} \quad \sqrt{x} = x^{1/2}$$

$$36\text{cm}^2 \quad nm \div nm = n^0$$

$$m\sqrt{(23 \times$$

FONT M4 (Mathematics)

$$G_m(t) = \frac{4\pi\hbar^2\gamma^4}{5N} j$$

Russian and maths samples

Contacts

Ace Computing, 27 Victoria Road, Cambridge CB4 3BW.
BBC Soft, 80 Wood Lane, London W12 0TT.
Beard Technology, 111 Evering Road, London N16 7SL.
Beebug, Dolphin Place, Holywell Hill, St. Albans, Herts AL1 1EX.
CDS, Unit 17, Chapman Way, Tunbridge Wells, Kent TN2 3EF.
Centre for World Development Education, Regent's College, London NW1 4NS.
Clares Micro Supplies, 98 Middlewich Road, Rudheath, Northwich, Cheshire CW9 7DA.
ESM, 32 Bridge St, Cambridge CB2 1UJ.
Ian Copestake Software, 10 Frost Drive, Wirral, Merseyside, L61 4XL.
Ground Control, 4 Alfreda Avenue, Hullbridge, Hackley, Essex SS5 6LT.
Mijas Software, Winchester Road, Micheldever, Winchester, Hants SO21 3DG.
David Pilling, PO Box 22, Thornton Cleveleys, Blackpool FY5 1LR.
Watford Electronics, Jessa House, 250 Lower High Street, Watford WD1 2AN.
Z & Z Software, Brecklands, Broad Oak, Shrewsbury, Shropshire SY4 3AH.

Not on the net

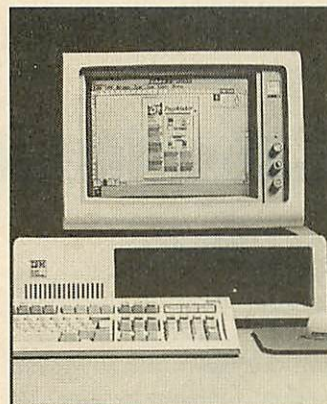
Now that Micronet has abandoned paid-for downloadable software, *AU's* program listings are no longer available on Micronet. Your only alternative to typing them in yourself is to buy our monthly listings disc - see page 115.

In next month's issue

February's issue majors on connectivity - linking the BBC micro to other types of computer. In particular, David Atherton shows how files can be exchanged with IBM PCs, with Macintoshes and even with mainframe computers.

Plus there's an interview with ex-Cabinet Minister Tony Benn, who owns seven BBC micros and is using them to prepare his political diaries for publication.

Education concentrates on spreadsheets - Chris Drage and Nick Evans discuss what they are and how they can be used in schools. And will mathematics teaching be transformed by *Numerator*, new



Transfer BBC data to an IBM PC



Swap files with a Macintosh

software from Logotron reviewed by Martin Phillips?

Reviews include the latest in printing technology - the Qume CrystalJet and Hewlett Packard's DeskJet - two machines that aim to give you laser quality at half the price. Malcolm Brown says whether they succeed. And Rob Wilmott looks at the latest professional-quality circuit board design software for the Arc.

We also look at Acorn's plans for RISC OS and Unix, as well as the regulars: Hints and Tips, Arc Agora, the DTP page and Music Column.

BLUNDERBOX

Last month's Top Hundred feature used a screenshot of *InterWord*, Computer Concept's other successful wordprocessor, instead of *Wordwise*.

October's Top of the List to produce double-height and double-width text was missed off the contents page. The listing can be used either as a stand alone utility or combined with Joe's Ideas Processor to speed up some of the display routines. The listing and instructions for adding the routines to Joe's program appeared on page 94.

Diary dates

December 11. SATRO North Scotland Computer & Technology Show, Music Hall, Aberdeen. Dr Lesley Glasser, SATRO North Scotland, University of Aberdeen. (0224) 273161.

December 12-15. Which Computer? Show, National Exhibition Centre, Birmingham. Cahners Exhibitions, 01-891 5051.

December 18-21. British Education & Training Halls, Golden Lane, London, EC4. EMAP Exhibitions, 12 Bedford Row, London WC1. 01-404 4844.

POST A PROBLEM

BBC Acorn User has a guaranteed fast reply service for enquiries. Your answer will be returned within 10 working days for just £3 (includes VAT), or your money back.

Just write out your problem, fill in the coupon (right), and send both off to *BBC Acorn User* with a stamped addressed envelope and cheque or postal order for £3 made out to Redwood Publishing. If you want recorded delivery add the cost of this on. Include as much detail as possible, and a disc or cassette if a program is involved, with enough space to record any corrected listing.

Please note: debugging readers' programs or those from other magazines is a complex task and we cannot guarantee to give a full solution. Unless this problem can be spotted quickly, the service will only be able to make general comments.

We will answer the problem and return all material received - within a guaranteed 10 working days from receipt. If we fail to match this promise then your cheque or postal order will be returned with the answered question - you can't lose.

BBC ACORN USER READER SERVICE
 20-26 Brunswick Place, London N1 6DJ.

NAME _____

ADDRESS _____

POSTCODE _____

DAYTIME PHONE NUMBER _____

I enclose a cheque/postal order for £3 made out to Redwood Publishing and an sae with my problem.

OFFICE USE ONLY Date in: _____

Date out: _____

Answered by: _____

computech

INTEGRA-β

The Expansion for the BBC Model B

Includes

64k Sideways Ram,
12k Private Ram,
20k Shadow Ram,
Real-Time Clock,
8 free Rom sockets -
will take 128k Ram.

What the press have said -

A&B Computing - Clive Grace
"I like this board -- buy it!"

ACORN USER - Dave Fletcher
"an outstanding product"

The INTEGRA-β provides four operation modes - as standard Beeb or with shadow Ram and emulation of 'B+' or of Master 128. Ideal for educational, commercial and data collection applications, as well as the private user.

The included battery-backup system, (which covers all fitted Ram), can save any data in Ram during a power-line disturbance or when the computer is switched off. Also, Rom images can be loaded from disc, stored and cleared at will, minimising the need for physical Rom changes. Compatible with DFS, ADFS and second processors conforming to ACORN® protocols.

OFFER PRICES

UK - £130 (incl. P&P, VAT), Europe - £118 (incl. P&P), Others - £118 plus P&P.
Extra 32k RAM Chip - £14 - (incl. P&P UK & Europe)
Dual WP Switch Assembly - £7, Extra Way - £1.50, (incl. P&P UK & Europe)

COMPUTECH

The Garth, Hampsfell Road, Grange over Sands, Cumbria. LA11 6BG
Telephone: 044 84 4604

TOO MUCH
TO ASK?

HELP!

HELP!

BBC

ARCHIMEDES

WE SPEAK
FLUENT
ACORN

If only there was someone local you could talk to about ACORN. Actual programmers who knew all the wrinkles and could help you out. How many times have you thought "I'm sure I'm making a silly mistake but I just can't get it to do this XXX thing!" Buy from CCE Catsoft and you're buying over 60 years combined programming experience - we've been working on the BBC Micro since before it came on the market and even developed the LOGO language ourselves! You'll get superb pre-sales advice and after sales service. And anyone who works with computers knows how important that is.

WE WRITE CUSTOMISED SOFTWARE TOO!

Whatever your needs our software development department can help you to use your computing potential to the full. We're experts in developing programmes on ARC, BBC, AMSTRAD and versions of our programmes will run on most micros and many mainframes.

PLUS AMSTRAD, PLUS DISCS, PAPER, PRINTERS RIBBONS ETC

CCE CATSOFT LTD

OFFICIAL ACORN DEALERS FOR THE SOUTH WEST

80 NORTH ROAD, YATE BRISTOL BS17 5PR

TELEPHONE 0454 321088

Mercury Games

The Best Games
at the
Lowest Prices

| Title | BBC Micro Cassette | BBC Micro 5¼" Disc | BBC Master Compact Disc | Acorn Electron Cassette |
|-------------------------|-----------------------|-----------------------|----------------------------|----------------------------|
| EXILE | £9.50 | £11.50 | £15.75 | £9.50 |
| REPTON INFINITY | £9.50 | £11.50 | £15.75 | £9.50 |
| THE LAST NINJA | £6.95 | £8.95 | £11.75 | £6.95 |
| PLAY IT AGAIN SAM 1 - 6 | £6.95 | £8.95 | £11.75 | £6.95 |
| SUMMER OLYMPIAD | £6.95 | £11.50 | £11.75 | £6.95 |
| KARATE COMBAT | £2.50 | — | — | £2.50 |
| JOE BLADE II | £1.65 | — | — | £1.65 |



(0532) 424712



Mercury Games, Unit 3, Sheepscar House,
Sheepscar St South, Leeds, West Yorkshire.

Please phone or write to order these games or
to obtain a free copy of Mercury Games catalogue.

SUPER BARGAINS ON HARDWARE

LATEST TITLES

| | Tape | Disk |
|---------------------------|-------|--------|
| Repton Thru Time | £5.50 | £6.50 |
| Saigon | £7.50 | £11.95 |
| Barbarian | £7.50 | £9.95 |
| Shark | £7.50 | £9.95 |
| Breakthrough | £7.50 | £9.95 |
| Empire Strikes Back | £7.50 | £9.95 |
| Summer Olympiad | £7.50 | £11.95 |

LATEST FROM SUPERIOR

PLAY IT AGAIN SAM 4
PLAY IT AGAIN SAM 5
PLAY IT AGAIN SAM 6
FAIR MEANS OR FOUL

SPECIAL XMAS PRICE

Tape **£7.00** Each game

Disk **£9.25** Each game



CURRENT TITLES

| | Cass | Disk |
|--------------------------------|-------|-------|
| Spycat | 7.50 | 9.95 |
| Icarus | 7.50 | 9.95 |
| Tetris | 6.95 | 9.95 |
| Boulderdash | 7.50 | 11.95 |
| Indoor Sports | 7.50 | 11.95 |
| Quest | 7.50 | 9.95 |
| Play It Again Sam II | 7.50 | 9.95 |
| Kourtyard | 7.50 | 9.95 |
| Skirmish | 7.50 | 9.95 |
| The Lost Crystal | 9.95 | 11.95 |
| Spellbinder | 7.50 | 9.95 |
| Life of Repton | 5.50 | 6.50 |
| Elixir | 7.50 | 9.95 |
| Bonecruncher | 7.50 | 9.95 |
| Despatch Rider | 6.00 | 8.95 |
| Impact | 7.50 | 9.95 |
| Ransack | 7.50 | 9.95 |
| Ziggy | 6.00 | 8.95 |
| Graham Gooch Cricket | 6.50 | 9.95 |
| Thunderstruck II | 6.50 | 9.95 |
| Spy v Spy | 7.50 | 9.95 |
| Phantom (Tynesoft) | 6.50 | 9.95 |
| Winter Olympiad | 7.50 | 12.50 |
| Village of Lost Souls | 7.50 | 10.50 |
| Project Thesus | 7.50 | 10.50 |
| Rick Hanson Trilogy | 18.00 | 21.00 |
| Play It Again Sam | 7.50 | 9.95 |
| Spitfire 40 | 7.50 | 10.95 |
| Palace of Magic | 7.50 | 9.95 |
| Crazy Rider | 7.50 | 9.95 |
| Codename Droid | 7.50 | 9.95 |
| Repton 40 Screens | 5.50 | 6.75 |
| Revs + 4 Tracks | 10.50 | 12.95 |
| Grand Prix Construction | 7.50 | 9.95 |
| Superior Collection Vol1 | 7.50 | 9.95 |
| Superior Collection Vol2 | 7.50 | 9.95 |
| Colossus Chess | 7.50 | 12.95 |
| The Hunt | 7.50 | 10.95 |
| Elite | 10.50 | 10.95 |
| Star Wars | 7.50 | 10.95 |
| Evening Star | 7.50 | 9.95 |

ACORN TELETEXT ADAPTORS

complete with manual +
BBC SOFT ATS ROM for all BBC Masters
OUR PRICE ONLY £89.00

DISK SPECIALS AT £3.99 Each

Round Heads
World War I
Pyscastria
Footballer of the year
Bug Byte 2

TAPE SPECIALS AT £2.99 Each

Power Pack (7 games)
Last of the Free
Genesis project and international
Megaspports

NEW RELEASE FROM SUPERIOR

Exile Tape **£10.50** Disk **£11.95**

FREE XMAS PRESENT

WITH EVERY £10 SPENT
(Software orders only)

From Superior,
Pipeline, and
Play It Again Sam 3
tape **£7.50** Disk **£9.95**

Acorn Electronics
with power supply and
manual + 20 peice
software pack. **£59.95**

BBC Second Processors

6502 -Z80 -1EEE48 32016
-Prestel -Arm Teletext. Ring
for price and availability.

ACORN SPEECH UPGRADE KITS BBC/B+

**OUR PRICE
£19.95**



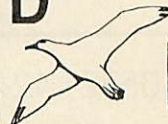
TOWERHILL COMPUTERS LTD

Unit 5, Acacia Close,

Cherry Court Way Ind Est, Leighton Buzzard, Bedfordshire

Telephone: Leighton Buzzard (0525) 385329/383074

ALL PRICES INCLUDE V.A.T. AND P&P. OVERSEAS ORDERS ADD £2.00



COMP SHOP LTD

A MEMBER OF CARYWOOD PLC

**PART EXCHANGE YOUR
BBC B OR MASTER FOR
ANY OF THESE PRODUCTS –
CALL FOR DETAILS**

BBC Master Series

| | |
|----------------------|-------------|
| Master 128 | 331.00 |
| Master Turbo upgrade | 105.00 |
| Master 512 upgrade | 99.00 |
| ISO Pascal | 49.00 |
| Interword | 35.00 |
| Intersheet | 35.00 |
| Interbase | 48.00 |
| Spellmaster | 39.00 |
| Mega 3 ROM | 69.00 |
| Edword 2 | 42.00 |
| Acorn DFS Upgrade | 49.00 |
| Second User BBC Bs | from 175.00 |

AMSTRAD Computers

| | |
|----------------------------|---------|
| PC1640SD Mono | 469.00 |
| PC1640DD Mono | 569.00 |
| PC1640HD20 Mono | 829.00 |
| PC1640SD Colour | 599.00 |
| PC1640DD Colour | 699.00 |
| PC1640HD20 Colour | 959.00 |
| PC1640S Enhanced Colour | 739.00 |
| PC1640DD Enhanced Colour | 839.00 |
| PC1640HD20 Enhanced Colour | 1099.00 |
| PCW 8256 | 339.00 |
| PCW 8512 | 429.00 |
| PCW 9512 | 449.00 |
| DMP4000 15" Printer | 199.00 |
| uScribe 30Mb Drive + cont | 349.00 |
| Wordstar 1512 | 49.00 |
| Supercalc 3.1 | 49.00 |
| Accounts Master DD | 79.00 |

ACORN Archimedes

| | |
|-------------------|---------|
| A305 Base | 599.00 |
| Mono | 649.00 |
| Colour | 789.00 |
| A310 Base | 709.00 |
| Mono | 759.00 |
| Colour | 899.00 |
| A310M Base | 759.00 |
| Mono | 809.00 |
| Colour | 949.00 |
| A440 Base | 2149.00 |
| Mono | 2199.00 |
| Colour | 2349.00 |

EUROMICRO Systems

| | |
|---|---------|
| 286/10 1 MByte RAM, 1.2 Mbyte floppy, Mono Monitor | 1099.00 |
| 286/10 1 MByte RAM, 1.2 Mbyte floppy, EGA Colour Monitor | 1499.00 |
| 286/10 1 MByte RAM, 1.2 Mbyte floppy, Mono Monitor, 20 Mbyte Winchester | 1299.00 |
| 286/10 1 MByte RAM, 1.2 Mbyte floppy, EGA Colour Monitor, 20 Mbyte Winchester | 1699.00 |
| Complete with 101 Key Keyboard, Serial and Parallel ports, MSDOS v3.21., and GMBasic. | |

10th ANNIVERSARY SALE

COMPSHOP ESTABLISHED NOVEMBER 1978

PRINTERS

| | | |
|---------------------|-----------------|---------|
| Epson | LX800 | 169.00 |
| | LQ500 | 269.00 |
| | LQ850 | 459.00 |
| | LQ1050 | 579.00 |
| | LQ2500+ | 729.00 |
| | FX850 | 329.00 |
| | FX1050 | 429.00 |
| | EX800 | 439.00 |
| | EX1000 | 579.00 |
| | GQ3500 | 1229.00 |
| Panasonic | 1081 | 140.00 |
| | 3131 Daisywheel | 229.00 |
| Star LC10 | | 189.00 |
| Canon PW1080 | | 169.00 |
| Canon PJ1080 Colour | | 399.00 |
| Juki 6100 | | 279.00 |
| Intergrex Colour | | 499.00 |

CUMANA Disk Systems

| | | | |
|---------------------------|------|--------|--|
| Single without PSU | | | |
| CSX200 40T | 200K | 75.00 | |
| CSX400 80T | 400K | 89.00 | |
| CSX354 3.5" | 400K | 74.00 | |
| Single with PSU | | | |
| CS100 40T | 200K | 89.00 | |
| CS400 80T | 400K | 104.00 | |
| CS354 3.5" | 400K | 87.00 | |
| Dual without PSU | | | |
| CDX400 40T | 400K | 146.00 | |
| CDX800 80T | 800K | 176.00 | |
| Dual with PSU | | | |
| CD400 40T | 400K | 169.00 | |
| CD800S 80T | 800K | 195.00 | |
| CD358 3.5" | 800K | 147.00 | |
| Combo 5.25"/3.5" | 800K | 225.00 | |

MONITORS

| | |
|-------------------|--------|
| Philips | |
| 12" Green 7502 | 65.00 |
| 14" Green 7752 | 79.00 |
| CM8833 Colour | 215.00 |
| Microvitec | |
| 1431MS Std Res | 165.00 |
| 1431DS Std Res | 165.00 |
| 1431MS/AP | 198.00 |
| 1431DS/AP | 198.00 |
| 1451MS Med Res | 196.00 |
| 1451DS Med Res | 196.00 |
| 1451MS/AP | 249.00 |
| 1451DS/AP | 249.00 |

JUNK BOX (ex-demo) (or second hand)

| | |
|-----------------------------|--------|
| TEC F10-40 | 499.00 |
| Acorn Z80 Second Processor | 100.00 |
| Anadex 8500 (Non-runner) | 50.00 |
| Cumana CD200 Disk Drive | 100.00 |
| Cumana CSX100 Disk Drive | 50.00 |
| Cumana CS400 Disk Drive | 70.00 |
| Microvitec 1431 Monitor | 120.00 |
| Philips Amber Monitor | 60.00 |
| Kaga Taxan Green Monitor | 50.00 |
| Apple Macintosh | |
| Add-on drive | 100.00 |
| Apple Disk with Controller | 99.00 |
| Apple Additional Disk Drive | 99.00 |
| Duodisk with Controller | 149.00 |
| Apple Monitor | 50.00 |

ALSO RANGE OF SECOND USER BBC AND AMSTRAD EQUIPMENT

- 12 Months Parts and Labour Warranty.
- Deliver per order by courier £12.50, by post £3.00.
- Educational, Government and nationally recognised PLC orders welcome.
- These prices apply to cash (or cheque, normal conditions apply) sales, and official orders only.
- Prices subject to change without notice.
- Prices exclude VAT (Please add 15%).

**NEW SHOWROOM/
WAREHOUSE
OPENING SOON**

Innovation House,
Albany Park, Frimley Road,
Camberley, Surrey. GU15 2PL. England.
Telephone: (0276) 22677 (Sales)
(0276) 684715 (Technical)
(0276) 29219 (Accounts)
Fax: (0276) 684716

The Atari 520STFM



Of £450 worth



MARBLE MADNESS. £24.95
Electronic Arts.



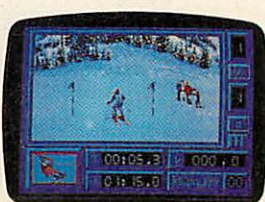
TEST DRIVE. £24.95
Electronic Arts.



BEYOND THE ICE PALACE. £19.95
Elite.



BUGGY BOY. £19.95
Elite.



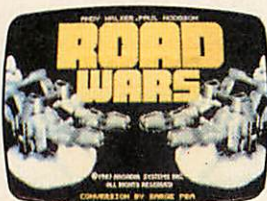
EDDIE EDWARDS SUPER SKI. £19.95
Elite.



IKARI W



CHOPPER X. £9.99
Mastertronic.



ROAD WARS. £19.95
Melbourne House.



XENON. £19.95
Melbourne House.



ARKANOID II. £19.95
Imagine.



WIZBALL. £19.95
Ocean.



BLAC

Here it is! The new Super Pack from Atari.
You don't just get the brilliant 520STFM.
We're giving you twenty-two great software
titles that most people would gladly sell their
grannies for.

There's no catch. You really do get the
520STFM and £450 worth of great software
titles for just £399.99.

So make sure you include yourself in this
great offer.*

*Available from most Atari dealers. Offer ends March 1st 1989.

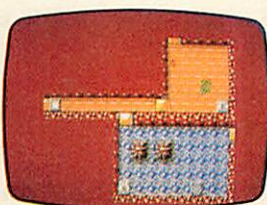
£399.99 inclusive.



of software.



S. £14.95



RANARAMA. £19.95
Hewson.



THUNDERCATS. £19.95
Elite.



ZYNAPS. £19.99
Hewson.



QUADRALIEN. £19.95
Logotron



STARQUAKE. £19.95
Mandarin.



GENESIS. £19.95



GENESIS. £19.95
Firebird.



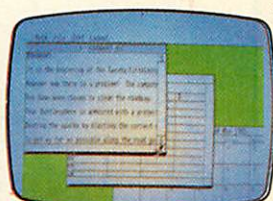
THRUST. £9.95
Firebird.



SECONDS OUT. £19.95
Tynesoft.



SUMMER OLYMPIAD 88. £19.95
Tynesoft.



ORGANISER BUSINESS
SOFTWARE. £49.95
Triangle Publishing.

Please send me details of this and other Atari Products

AU/1/89

Name _____ Address _____

Postcode _____

Atari Corp (UK) Ltd., Atari House, Railway Terrace, Slough, Berkshire SL2 5BZ

ATARI
SUPER PACK

Archimedes

RING FOR
DETAILS
OF 0% FINANCE

| | |
|--------------------|----------|
| 310 Colour System | £965.00 |
| 310M Colour System | £1025.00 |

BBC MASTER 128

| | |
|-----------------------|---------|
| Master 128 | £359.00 |
| Turbo upgrade | £99.00 |
| 512 DOS upgrade | £99.00 |
| Compact mono system | £349.00 |
| Compact colour system | £479.00 |

DISC DRIVES

| | |
|-------------------------------------|---------|
| 5¼" Mitsubishi/Teac 2 year warranty | |
| MD400A D/S 40/80 | £89.00 |
| MD400B D/S 40/80 PSU | £99.00 |
| MD802C DUAL D/S 40/80 | £179.00 |

MONITORS

| | |
|------------------------------|---------|
| 1431 Microvitec Std. Res. | £169.00 |
| 1451 Microvitec Med. Res. | £199.00 |
| 7502 Philips High Res. Green | £65.00 |
| 8833 Philips Med. Res. | £209.00 |

PRINTERS (inc. cable)

| | |
|----------------------------|---------|
| Citizen 120D 120cps 80col. | £129.00 |
| Star LC-10 100cps 80col. | £179.00 |
| Epson FX850 264cps 54 NLQ | £325.00 |

Citizen C106 Laserjet compatible
512K Laser printer £1149.00

ALL PRICES EXCLUDING VAT

Carriage outside Rotherham £6.00 on large items

BEFORE YOU PLACE YOUR
NEXT ORDER, TALK TO US!

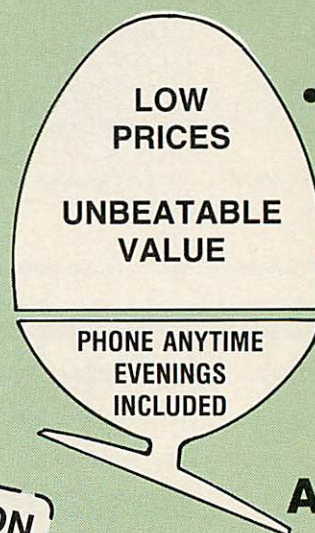
Rotherham Computer Centre

135 Wellgate Rotherham S60 2NN
Tel: 0709 369912

Service Centre & Authorised Dealer

ALSYSTEMS

HAMPSHIRE



- School Suppliers
- Education
- Training
- Econet
- Second-User BBCs
- Repairs

ALTON
(0420)
87213

ACORN ARCHIMEDES

65 SALISBURY CLOSE, ALTON, HAMPSHIRE GU34 2TF, UK

EXPORT & BFPO ORDERS



Archilock

The *complete* solution for Interactive Video using Archimedes.

The power of the Archimedes can now be used for interactive video training, sales and information systems. Archilock provides a complete interface to a range of videodisc and tape players.

- * Full genlock and pixel-accurate overlay.
- * Software controlled fades of both video picture and computer text.
- * Software controlled brightness, contrast and colour saturation.
- * Composite video or RGB input (eg: Philips 400 videodisc players).
- * RGB outputs for use with Archimedes monitor or any linear RGB/multiscan monitor.
- * Additional RS232 port.
- * Control software for a range of videodisc and tape players.
- * Only £495 + VAT. Complete IV systems available from £2,975.

Find out more about the Archimedes potential for Interactive Video

Call 01-977 0272

THE SOFT OPTION Elmtree Road, Teddington
INTERACTIVE TECHNOLOGIES Middlesex, TW11 8TD

Computers and Upgrades

ARCHIMEDES

Archimedes 305
Archimedes 305 mono
Archimedes 310
Archimedes 310 mono
Archimedes 310 col
Archimedes 310m
Archimedes 310m mono
Archimedes 310m col

NEW FOR 1989
Special package price on all Archimedes machines. 0% finance, software packages e.t.c. Phone our sales staff for details

SPECIAL OFFER

until 31st Dec 88. 0% FINANCE OVER 12 MONTHS (SUBJECT TO STATUS) AVAILABLE ON ALL ARCHIMEDES MACHINES.

| | |
|---|------------------|
| Archimedes podule backplane | £39.00 (d) |
| Archimedes ROM podule | £59.00 (d) |
| Archimedes I/O podule | £85.00 (d) |
| Archimedes MIDI add-on to I/O podule | £39.00 (e) |
| Archimedes MIDI Podule | £69.00 (d) |
| Master 128 | £369.00 (a) |
| Master Compact | from £310.00 (a) |
| Master Turbo Upgrade | £110.00 (c) |
| Master 512 Upgrade | £95.00 (c) |
| Master 128 Eprom Cartridge | £11.00 (c) |
| Master 128 Dust Cover | £4.50 (e) |
| Compact RS 232 Interface | £26.00 (c) |
| Compact TV Modulator | £26.00 (e) |
| 1770 Disc Interface | £41.00 (d) |
| ADFS ROM (B+ or B with 1770) | £25.00 (e) |
| B+64 64K Upgrade | £30.00 (d) |
| Cambridge Computers Z88 | £244.00 (a) |
| Z88 PSU £8.65 (d) 128K RAM £43.00 (e) 128K EPROM £43.00 (e) | |

Printers (Dot Matrix)

| | |
|---|-------------|
| Citizen 120 d 80col, 20CPS + 25cps NLQ | £150.00 (a) |
| Citizen MSP10E 80col, 160cps + 40 cps NLQ | £225.00 (a) |
| Citizen MSP15E 136c/160cps + 40cps NLQ | £230.00 (a) |
| Citizen MSP40 80c/200cps + 50cps NLQ | £300.00 (a) |
| Citizen MSP45 136c/200cps + 50cps NLQ | £400.00 (a) |
| Citizen MSP50 80/250cps + 60cps NLQ | £379.00 (a) |
| Citizen MSP55 136c/250cps + 60cps NLQ | £520.00 (a) |
| Citizen HQP45 24pin 136col 200 cps + 60cps LQ | £350.00 (a) |
| CITIZEN HQ P40 24pin 80col 200cps + 60cps Q | £379.00 (a) |
| STAR LC10 120cps + 30cps NLQ | £199.00 (a) |
| STAR ND10 80col/180cps + 45cps NLQ | £320.00 (a) |
| STAR ND15 136col/180cps + 45cps NLQ | £380.00 (a) |
| STAR NR10 80col/240cps + 60cps NLQ | £395.00 (a) |
| STAR NR15 136col/240cps + 60cps NLQ | £460.00 (a) |
| STAR LC24-10 80col/142cps + 47cps LQ 24pin | £305.00 (a) |

Printers (Daisy Wheel)

| | |
|----------------------------------|-------------|
| Juki 6100 110col 20cps | £290.00 (a) |
| Citizen Premier 35 132col 35cps | £554.00 (a) |
| MP26-26cps Diablo 630 compatible | £234.00 (a) |
| MP40-40cps Diablo 630 compatible | £319.00 (a) |

2yr warranty on Citizen, Juki and mp printer

Printers (Laser)

| | |
|-----------------------|-----------|
| Citizen Overture 110+ | |
| 10 pages/min | £1450 (a) |
| Star Laser Printer 8 | |
| 8 pages/min | £1900 (a) |

All laser printers with 1 year on-site maintenance.

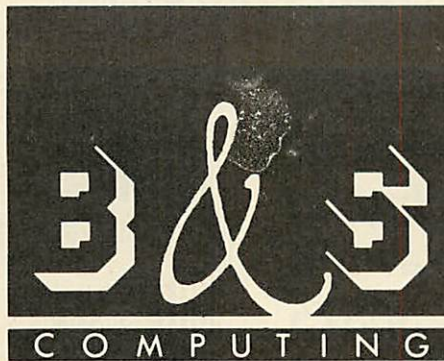
AMX Mouse and Software

| | |
|-----------------------|------------|
| AMX Mouse + Super Art | £60.00 (d) |
| AMX Pagemaker | £37.00 (d) |
| Extra Extra | £21.00 (e) |
| Mouse Mat | £4.34 (e) |

Disc Drives

| | |
|----------------------------------|-------------|
| Single DS 40/80T | £96.00 (a) |
| Single DS 40/80T in psu | £111.00 (a) |
| Dual DS 40/80T | £189.00 (a) |
| Dual DS 40/80T in psu | £209.00 (a) |
| Dual DS 40/80T in psu and plinth | £214.00 (a) |
| 20mb Winchester | £449.00 (a) |

Combination 3.5 5.28 Winchester available. Phone for details.



**BUSINESS SYSTEMS • HARDWARE
SOFTWARE • VIDEO SYSTEMS
MEDIA SUPPLIES
OFFICIAL DOMESDAY DEALER**



ACORN APPROVED DEALER

Phone 0602 787923

Discs

| | |
|--|------------|
| Discs 5.25" (Boxed in 10's Lifetime guarantee) | |
| 3M 744 SS/DD 48TPI | £8.00 (d) |
| 3M 745 DS/DD 48TPI | £9.00 (d) |
| 3M 747 DS/DD 96TPI | £13.00 (d) |
| Add £1 for plastic library case | |
| B & S Label 96TPI in see through LIB. Case DS/DD. | £10.00 (d) |
| Disc Cleaning Kit (state 5 1/4" or 3 1/2") | £5.00 (d) |
| 3.5" | |
| 3M 35SS SS/DD (Box of 10) | £13.00 (d) |
| 3M 35DS DS/DD (Box of 10) | £16.00 (d) |
| B & S Label DS/DD | £13.00 (d) |

| | |
|---|------------|
| Lockable Anti-Static 5.25" Storage Cases | |
| 50 Disc Capacity | £8.00 (d) |
| 100 Disc Capacity | £10.00 (d) |

Monitors

| | |
|--|-------------|
| All Monitors include BBC Lead | |
| Phillips Range of high resolution Mono Monitors with Audio Input Green | |
| BM 7502 (Green) | £69.00 (a) |
| Hi-Screen ST88 Monitor | |
| Spec as Phillips CM8833 | £195.00 (a) |
| Phillips Colour Monitor RGB, Composite Video, Audio in Linear RGB Green Screen Switchable BBC/IBM Compatible CM8833 | £220.00 |
| Microvitec | |
| 1431 (Metal or Plastic Case please specify) Std. Res | £184.00 (a) |
| 1451 (Metal or Plastic Case please specify) Med. Res | £229.00 (a) |
| 1441 (Metal or Plastic Case please specify) High Res. | £379.00 (a) |
| 1431 AP Metal Case RGB and CV/Audio Std. Res | £214.00 (a) |
| 1451 AP Metal Case only RGB and CV Audio Med. Res | £260.00 (a) |
| TILT and SWIVEL Stands for Plastic Case Only | £19.00 (d) |

| | |
|-----------------------|------------|
| Plinths | |
| BBC B Single | £11.00 (c) |
| BBC Master Single | £12.00 (c) |
| BBC Master with Shelf | £22.00 (b) |

ROM Boards

| | |
|-------------------------|------------|
| ATPL Sidewise Model B | £35.00 (d) |
| ATPL Sidewise Model B+ | £31.00 (d) |
| Viglen Spare Cartridges | £2.50 (e) |

We are licensed credit brokers. £1000 instant credit available ask for written details. (Apr 32.1%)

UK Customers: please add 15% VAT to all prices (including carriage).

Government and educational establishments official orders welcomed. When ordering please enclose a cheque or postal order for the appropriate amount, UK Carriage Rates (a) £8.00 - courier insured delivery (b) £3.50 (c) £2.50 (d) £1.50 (e) £1.00. All prices are correct at time of going to press. All offers are subject to availability, all prices are subject to change without prior notification and are available on request. Current price list is available on request.

Good normally despatched on receipt of order.

**B & S COMPUTING (NOTT'M) LTD
THE LENTON BUSINESS CENTRE
LENTON BOULEVARD
NOTTINGHAM NG7 2BY
PHONE: 0602 787923**

Peartree Products

| | |
|--|--------|
| MR5000 Master ROM Cartridge. Allows 2 ROMS to be fitted | £8.95 |
| MR6000 Master ROM Cartridge. Allows 4 ROMS to be fitted | £11.95 |
| MR7200 Master RAM Cartridge 32k W/P Sideways Cartridge | 33.95 |
| MR8000 Master RAM Cartridge 64k Battery Backed S/Ways RAM | 49.95 |
| MR3000 Mini ROM Board BBC B Only. Extension of 4 ROMs in the BBC | £15.95 |
| MR4300 Mini ROM/RAM Board BBC B 32k S/Ways + 3 ROM Sockets | £39.95 |
| MR4800 Mini RAM Board BBC B Only 128k Battery Backed S/Ways | |

Printer Ribbons and Accessories

| | |
|--|------------|
| Epson LX 86 (Compact) | £2.50 (e) |
| Epson MX 80/RX 80/FX 80/FX 80/85 (Compact) | £3.00 (e) |
| Juki 5510/Citizen MSP 20 (compact) | £3.00 (e) |
| Citizen 120D/LSP10 | £3.75 (e) |
| Taxan 810/Canon (Compat) | £3.75 (e) |
| Juki 6100 Multistrike | £2.30 (e) |
| Tally MT85 Fabric | £5.00 (e) |
| Tally MT86 Carbon | £7.00 (e) |
| Printer lead 1.5m B/B+M128/ELK + 1 | £6.00 (e) |
| Printer lead 1.5m Compact | £8.00 (e) |
| Printer lead 1.8m IBM or Archimedes Compatible | £10.00 (d) |
| 80col Printer Stand with paper shelves | £29.00 (c) |
| Printer Switch Box 2 Way "T" Switch | £34.00 (c) |

Modems

All Modems inc BBC Lead

| | |
|-----------------------------|-------------|
| Miracle WS2000 | £95.00 (c) |
| Miracle WS4000 Hayes Compat | £144.00 (a) |
| Pace Commstar II ROM | £28.00 (e) |
| Pace Linnet | £124.00 (c) |
| Pace Series 4 2123s | £230.00 (a) |

Software

Acorn Soft

| | | | |
|--------------------------------|------------|------------------------|------------|
| Micro Prolog | £50.00 (d) | ISO Pascal | £42.00 (d) |
| Logo | £44.00 (d) | BCPL | £39.00 (c) |
| View Printer Driver (D) | £8 (e) | Comal | £32.00 (d) |
| Lisp | £33.00 (e) | Hi View | £37.00 (d) |
| View professional | £75.00 (c) | View 3.0 | £39.00 (d) |
| Viewsheets | £37.00 (d) | View Store | £37.00 (d) |
| View Spell (BOT only) | £29.00 (d) | View Plot | £21.00 (e) |
| View Index | £10.00 (e) | Overview | £69.00 (c) |
| 1st Word Plus (Arch) | £75 (c) | Logistix (Arch) | £95 (d) |

Computer Concepts

| | | | |
|------------|------------|-------------|------------|
| Interword | £39.00 (d) | Inter Sheet | £39.00 (d) |
| Interchart | £26.00 (d) | Interbase | £49.00 (d) |

Archimedes versions available - call for price and availability

| | | | |
|--|------------|--------------------|------------|
| Mega 3 | £75.00 (c) | Spellmaster | £42.00 (d) |
| Wordwise | £30.00 (d) | Wordwise + | £37.00 (d) |
| Mirrorsoft | | | |
| Fleet Street Editor | £31.00 (d) | Fonts and Graphics | £11.75 (e) |
| Clares | | | |
| Fontwise + | £16.00 (e) | Replica III | £11.00 (e) |
| VINE MICRO REPLAY (State M/C and Disc Interface) | | | £30.00 (e) |
| Artisan (Arch) | £31 (e) | Artisan Support | £16 (e) |

NB It is essential to state machine and 40/80T when ordering software

Books (No VAT on books)

| | | | |
|---|------------|---------------|------------|
| Master Ref Manuals Pt1 | £14.00 (d) | Pt 2 | £14.00 (d) |
| Advanced Master ref Manual (Bray & Dickens) | £19.95 (d) | | |
| Lisp | £8.00 (e) | Forth | £8.00 (e) |
| BCPL | £14.00 (d) | View Guide | £6.00 (e) |
| View 3 | £9.00 (e) | View Sheet | £9.00 (e) |
| Archimedes Ref manual | | View Store | £39.00 (e) |
| Arm assembly language manual | | | £29.95 (d) |
| Mastering View ViewSheet and ViewStore | | | £12.95 (e) |
| Understanding Inter Word | | | £6.50 (e) |
| View - A Dabhand Guide | £12.95 (e) | Z88 Computing | £9.95 (e) |

Fanfold Paper and Labels

| | |
|--|------------|
| 2000 x 1 Part 60gm 11 x 9.5" Micro Perf | £12.00 (c) |
| 1000 x 1 Part 85gm 11 x 9.5" Micro Perf | £9.00 (c) |
| 1000 x 1 Part 90gm "Perfect" A4 Micro Perf | £12.00 (b) |
| 1000 89mm x 36mm Labels | £4.00 (d) |
| 1000 89mm x 49mm Labels | £6.00 (d) |
| 1000 102mm x 36mm Labels | £5.00 (d) |

Please state Single or Twin Row when ordering labels



DABHAND COMPUTING

The Dealer other Dealers recommend! For best prices and full technical support call Graham Stanley on (0727) 38375 for all your needs now.



PO Box 278
St Albans
Herts
AL4 9TD

OFFICIAL ACORN DEALERS!

Proprietor: Dabhand Computing Ltd. Registered in England No. 2262465. VAT No. 451 4565 47. Directors D. Atterton, B. Smith, G. Stanley.

ARCHIMEDES: BEST DEALS AROUND!

System A310

Base: £749.00

Mono: £799.00

Colour: £949.00

System A310M

Base: £799.00

Mono: £849.00

Colour: £999.00

System 440

Base: £2199.00

Mono: £2249.00

Colour: £2399.00

**FREE
SOFTWARE!**

Free! £115 worth of software – Archimedes Basic Compiler and Alerion game

Buy your system from us and we'll give you absolutely free of charge: a Dabs Press Archimedes Basic Compiler and Alerion arcade game worth over £115! (this makes the effective price of a A310 Mono £684!)

CUMANA DISC DRIVES

| Format | With PSU |
|--------------------------|----------|
| CS400S 40/80 switch 400k | 122.60 |
| CD800S 40/80 switch 800k | 242.60 |

BLANK DISCS

| Format | Qty | Price |
|--------------------|-----|-------|
| 5.25" DS 40T 48tpi | 10 | 6.95 |
| 5.25" DS 80T 96tpi | 10 | 8.26 |
| 5.25" DS 40T 48tpi | 50 | 41.73 |
| 5.25" DS 80T 96tpi | 50 | 42.60 |
| 3.5" 135tpi DS 80T | 10 | 12.17 |
| 3.5" 135tpi DS 80T | 50 | 47.82 |

All discs come with lifetime warranty and guarantee. Supplied post FREE!

DOT MATRIX PRINTERS

| | |
|-----------------------------|--------|
| Panasonic KXP1081 | 152.63 |
| Panasonic KXP1082 | 181.40 |
| Epson LX 800 | 234.78 |
| Epson FX 800 | 367.20 |
| Epson FX 1000 | 504.41 |
| Epson LQ 500 (24-pin) | 336.00 |
| Epson EX 800 (24-pin) | 503.20 |
| Star LC10 | 200.00 |
| Star LC10 Colour | 239.13 |

Buy any printer and save £5 on the Dabs Press HyperDriver Printer Control ROM - Just £24.95.

MONITORS

| | |
|-------------------------------|--------|
| Phillips Green Mono | 72.17 |
| Phillips Colour Monitor | 239.13 |
| Microvitec 1451 Colour | 251.30 |
| Microvitec 1431 Colour | 207.82 |
| Supervision 620 Colour | 276.52 |
| Supervision 625 Colour | 330.00 |

ARCHIMEDES SOFTWARE

| | |
|--|--------------|
| Archimedes Basic Compiler (ABC) | 86.91 |
| Ace Euclid | 37.17 |
| Acorn ANSI C | 94.05 |
| Acorn ISO Pascal | 94.05 |
| Acorn Fortran 77 | 94.05 |
| Acorn Logistix | 94.05 |
| Acorn PC Emulator | 94.05 |
| Acorn TWIN | 27.54 |
| Acorn Termulator | 56.05 |
| PC Emulator Shareware (4Mbs) | 30.39 |
| Logotron Logo | 57.13 |
| Colton Software - Pipedream | 94.05 |
| Minerva SigmaSheet | 57.78 |
| Minerva System Delta + | 57.78 |
| Minerva Order Processing | 53.65 |
| Minerva Stock Manager | 53.65 |
| Minerva Purchase Ledger | 53.65 |
| Minerva Nominal Ledger | 53.65 |
| Clares Artisan Art Package | 31.26 |
| Clares Toolkit | 31.26 |
| Clares Render Bender | 66.04 |
| Alerion (Dabs Press) | 13.00 |
| Arcendium (Dabs Press) | 13.00 |
| Zarch (Superior) | 17.34 |
| Conqueror (Superior) | 21.69 |

ARCHIMEDES HARDWARE

| | |
|--|--------|
| 2nd Floppy drive (3.5" internal) | 118.74 |
| 20Mb Hard Disc | 474.05 |
| Podule Backplane | 37.05 |
| ROM Podule (Acorn) | 56.05 |
| I/O Podule | 80.74 |
| Midi Add-on | 37.05 |
| Midi Podule | 65.54 |
| 4-Slot Backplane | 56.08 |
| Archimedes Printer Lead | 7.78 |
| Archimedes Serial Lead | 8.26 |
| Archimedes Scart Lead | 7.76 |

ARCHIMEDES BOOKS

| | |
|---|-------|
| Archimedes Assembly Language | 14.95 |
| Archimedes Ref Guide Parts 1 & 2 | 29.95 |
| C: A Dabhand Guide | 14.95 |
| Archimedes Operating System (Jan) | 14.95 |

MASTER 128 & COMPACT

| | Base | Mono | Colour |
|-------------------------|--------|--------|--------|
| Master 128 | 379.05 | 439.05 | 599.05 |
| Compact | 326.08 | 382.60 | 500.00 |
| Compact TV System | 339.13 | | |

All our Masters are supplied with our Starter Packs which are absolutely **FREE** and contain over £50 worth of essential goodies!

Master 128 Starter Pack - Free: MOS Plus ROM, HyperDriver ROM, Ten 5.25 discs

Master Compact Starter Pack - Free: HyperDriver ROM, MOS Book, Five free 3.5" discs plus the option to purchase any two Dabhand Guides - books and disc - for just £29.95.

Choose from: Master Operating System, View: A Dabhand Guide, Viewsheet/ViewStore: A Dabhand Guide.

MASTER 512

| | |
|---|-------|
| Master 512 C0-processor | 99.00 |
| Master 512 Shareware | 26.04 |
| FREE: Shareware with each Master 512 co-processor purchased. | |

MAKE LOADSAMONEY!

Do you have an old BBC B or Master 128 sitting do absolutely nothing? Then we want it and we'll give you the very best price for it. Give us a ring right away to realise its full cash potential.

URGENTLY WANTED: Master 512 co-processors - any condition. If you can't get to grips with DOS and your Master 512 is sitting idle in your Master then why not sell it to us or trade it in for software or other hardware?

NEED HELP?

Free: Technical Help and Advice Service
Remember, when you purchase your computer or software from us and you'll also receive a free years subscription to our technical help service. Alternatively subscribe for one year at just £10 per annum.
Other dealers tell their customers to ring us when they have a problem. Why not wise up and start here first! You won't regret it!
Callers welcome - by appointment only.

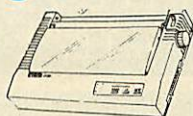
ORDERING DETAILS

ALL PRICES Ex-VAT. Please add carriage as follows: hardware over £100 - £10, software over £100 - £5. Orders under £100 - £1.50. Please enclosed cheque payable to "Dabhand Computing", or quote your Access or Visa number and expiry date. Purchase Orders (Terms 30 days) accepted from PLCs/ Education/Public Sector. Foreign orders, same prices and rates, as extra carriage is covered by lack of VAT. Payment in sterling please. Access/Visa. Orders also accepted by telephone on 0727 38375 (9am-6pm). Callers by appointment only. Prices subject to increase without notification. Orders to:

Dabhand Computing Ltd. (AU)
PO Box 278
ST. ALBANS
Herts
AL4 9TD

ACORN USER JANUARY 1989

A

CITIZEN**120D CENTRONICS**

- * 120 CPS DRAFT
- * 24 CPS NLQ
- * FRICTION AND TRACTOR FEED
- * 4K BUFFER

£120.87 + VAT = £139**HQP45 * 24 PIN PRINTER**

- * WIDE CARRIAGE 138 cps
- * 200 cps 66 NLQ * 24K BUFFER

£399 + VAT = £485.85**ARCHIMEDES**

305 series

- Prices inc VAT
- * Base **£699 inc**
 - * Mono **£769 inc**
 - * Colour **£939 inc**

310 series

- * Base **£799 inc**
- * Mono **£859 inc**
- * Colour **£1049 inc**

440 series

- * Base **£2528 inc**
- * Mono **£2587 inc**
- * Colour **£2764 inc**

PC Emulator

£79 inc**NEC****P2200 CENTRONICS**

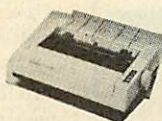
- * 140 CPS DRAFT
- * 47 CPS NLQ
- * 24 PIN
- * FRICTION AND TRACTOR FEED
- * OPTIONAL C.S.F

£286 + VAT = £329**PHILIPS MONITORS**MONO 7502 **£68 + VAT = £79**COLOUR 8833 **£225 + VAT = £259**COLOUR 8852 **£259 + VAT = £297****star****LC-10 CENTRONICS**

- * BUILT IN FONTS
- * 120 CPS DRAFT
- * 30 CPS NLQ
- * 4K BUFFER
- * OPTIONAL C.S.F.

£181.73 + VAT = £209LC-10 COLOUR **£225 + VAT = £259**LC-24 10 **£270 + VAT = £310**NX-15 **£289 + VAT = £332****P.C. COMPATIBLES**ALL AMS PC'S IN STOCK
PRICES START FROM **£399**COMMODORE PC'S IN STOCK
PRICES START FROM **£319**ATARI PC3 DOUBLE DISK DRIVE,
INCLUDES GEM SOFTWARE, MOUSE,
MONITOR, KEYBOARD **£599 + VAT = £688**

WE ALSO STOCK OPUS, SAMSUNG

Panasonic**KXP-1081**

- * 120 CPS DRAFT
- * 24 CPS NLQ
- * IBM/EPSON COMPATIBLE
- * FRICTION AND TRACTOR FEED
- * CENTRONICS

£138.26 + VAT = £159**COMMODORE AMIGA**A500 + FREE MODULATOR **£389 INC**ATARI, 520 STFM SUPER PACK **£359**ATARI, 520 STFM IM DRIVE **£299**ATARI, 1040 STFM **£399****LAZER PRINTERS****PANASONIC KXP4450**

- * 300 DPI
- * 512K
- * SERIAL/PARALLEL
- * 1 YEAR WARRANTY

£1564.35 + VAT = £1799.00**CANON LBP-811**

- * 300 DPI
- * 412K
- * SERIAL/PARALLEL

£1477.39 + VAT = £1699.00**REPAIRS**WE REPAIR ALL SORTS OF
MICROS AND MONITORS ON THE
PREMISES.OUR PRICES ARE COMPETITIVE
AND ALL REPAIRS CARRY
GUARANTEE.**COMPUTERS LIMITED. WHERE TOP NAMES COST LESS!**

**ALL PRICES
SHOWN INC.
VAT AND FREE
DELIVERY**

BRISTOL: 42 Cannon Street, Bedminster..... Tel: 0272 637981
BRISTOL: 3 North Street, Bedminster.

CARDIFF: 87 City Road..... Tel: 0222 483069

SWINDON: 31 Farringdon Road..... Tel: 0793 512074/3.

All prices include VAT and free delivery**Mail order from Bristol only**

**IF YOU LIKE TO RUN
YOUR FRANCHISE
BUSINESS WRITE TO
42 CANNON STREET,
BEDMINSTER, BRISTOL
B53 1BN**

TECHNOMATIC

Techno House 468 Church Lane, London NW9 8TQ. Tel: 01-205 9558 Fax: 01-205 0190
305 Edgware Road, London W2 Tel: 01-723 0233

ARCHIMEDES, BBC COMPUTERS & ECONET REFERRAL CENTRE

To inaugurate our move to the new premises we are offering special deals on Archimedes

(A) Archimedes 310 (£835) + Colour Monitor AKF11 (£220)
National Panasonic KXP 1081 + Lead (£145)
+ Pro Artisan (£169) **for only £1055**

A SAVING OF £314 + VAT

(B) Archimedes 310 (£835) + Multisync Monitor* (£479)
+ Pro Artisan (£169) **for only £1159**

A SAVING OF £324 + VAT

(C) Archimedes 440 (£2529) + Colour Monitor AKF11 (£220)
National Panasonic KXP1081 + Lead (£145) +
Pro Artisan (£169) + Software Developers Toolbox (£199) **for only £2649**

A SAVING OF £613 + VAT

(D) Archimedes 440 (£2529) + MultiSync Monitor* (£479) +
Pro Artisan (£169) + Software Developers Toolbox (£199) **for only £2749**

A SAVING OF £627 + VAT

Add £50 to above prices for PC Emulator
Carriage for any of the above systems £16

*Taxan 770+ or NEC Multi/Sync will be offered at our option
Customers for (B) and (C) will be offered 5% discount on our stock printers.
These offers are valid whilst stocks last.

EXPANSION SYSTEMS

| | | | |
|------------------------------------|----------------|----------------------------|----------------|
| 2nd Floppy Drive (305-310) | £118(b) | MIDI Expansion Card | £66(c) |
| 20Mb Hard disc + Card (305-310) | £469(b) | MIDI Add-on to I/O | £37(d) |
| Acorn Backplane (2 slots) | £37(c) | IEEE Interface Card | £283(b) |
| AtomWide Backplane (4 slots) | £49(c) | 16bit Parallel I/O Card | £195(b) |
| TechnoLog Backplane (4 slots) | £49(c) | Dual RS232 Card | £195(b) |
| (includes provision for expulsion) | | Armado Sound Sampler | £105(c) |
| Fan for AW/TechnoLog Backplane | £10(d) | Fourier Transform Software | £40(d) |
| I/O Podule | £80(c) | AtomWide Prototyping Board | £35(d) |
| Acorn ROM Expansion Card | £55(c) | ARC/BBC Serial Link | £25(d) |
| CC Rom Expansion Card | £45(c) | ARC External drive Adaptor | £30(d) |
| Econet Network Module | £43(d) | ARC External 5.25" Drive | £90(b) |
| | | Arc Printer Lead | £7(d) |

SOFTWARE

BOOKS (no VAT)

| | |
|---------------------------|------------------|
| Arc Ref Manual | £29(b) |
| Arc Assy Lang Prog (DABS) | £14.95(b) |
| Inside Autosketch | £15(b) |
| PC Emulator Version 1.20 | £90(d) |

LANGUAGES

| | |
|-----------------------------------|----------------|
| ANSI C/ISO PASCAL/Fortran 77 each | £95(c) |
| Prolog X/LISP each | £191(c) |

PROGRAMMER TOOLS

| | |
|-----------------------------|----------------|
| SV RISC BASIC Compiler | £85(c) |
| TWIN Editor | £29(d) |
| Clares Toolkit Module | £32(d) |
| Clares Toolkit Plus Module | £41(d) |
| Software Developers Toolbox | £199(b) |
| Archimedes Assembler | £199(b) |

WORD PROCESSORS

| | | | |
|-----------------|---------------|----------------|---------------|
| First Word Plus | £79(c) | VIEW SKM31 (e) | £47(d) |
| Graphics Writer | £27(d) | InterWord (e) | £35(d) |
| Pipedream | £99(c) | Wordwise (e) | £20(d) |

SPREADSHEETS

| | | | |
|----------------|---------------|----------------|---------------|
| Logistix | £95(d) | SigmatSheet | £59(d) |
| Intersheet (e) | £35(d) | Viewsheets (e) | £47(d) |

DATABASES

| | | | |
|------------------|---------------|----------------|---------------|
| Deltabase | £26(d) | Viewstore (e) | £47(d) |
| AlphaBase | £39(d) | Prog Ref Guide | £26(d) |
| System Deltabase | £57(d) | | |

ACCOUNTING SOFTWARE

| | |
|---|---------------|
| Minerva's Suite 5 Modules (ea) | £54(d) |
| (Order Processing/Sales Ledger/Stock Manager) | |
| Purchase Ledger/Nominal Ledger | |

Items marked (e) run under 6502 emulation.

0% FINANCE

12 months to pay

For a limited period we are able to offer Archimedes systems with payments spread over a 12 month period with no interest charges to pay. Additionally, we will present you with a voucher worth £100 + VAT which you can redeem against your future purchases from us. Please phone/write for details.

Technomatic Ltd are a licensed credit brokers

New RISC OS

The multi tasking operating system for the Archimedes RISC OS will be available next year. We are able to offer you an introductory price of £29(c) whilst our initial stocks last. Order your set now and be sure of being one of the first recipients of this OS at the concessionary price. Use VISA/ACCESS to order and you will not be charged until we actually despatch the package to you. You can redeem part of the voucher value to pay for the RISC OS.

MASTER SERIES

AMB15 Master 128K **£356(a)**

We include free Educational/Fun software bundle from BBC Publications range (RRP £40) and a STARdataBASE package worth another £40.

ADC06 Turbo 65C102 Module **£115(b)**

| | | | |
|---|---------------------|---------------------|-----------------|
| ADF10 Econet Module | £40(c) | Acorn Rom Cartridge | £13(d) |
| ADJ22 Ref Manual I | £14(c) | ADJ23 Ref Manual II | £14(c) |
| View User Guide | £8.50(d) | V/sheet User Guide | £8.50(d) |
| TRC2 ROM Cart | £7.50(d) | TRC44ROM Cartridge | £11(d) |
| TRC3232K RAM Cart. | £21(d) | Master Dust Cover | £4.75(d) |
| Acorn IEEE Interface (for B, B+ Master) | £265(b) | | |
| Universal CoProc Adaptor | £49(b) | | |
| BBC Domesday System | £3,750(2x a) | | |

ECONET ACCESSORIES

| | |
|--------------------------|-----------------|
| Stacking Filestore E01S | £999(d) |
| Filestore Hard Disc E40S | £899(a) |
| Filestore Hard Disc E60S | £1199(a) |

(These will be available in limited numbers during Dec/Jan so order in good time to ensure early delivery)

ECOLINK Card Full spec on request **£299(b)**

(PX/XT/AT interface card for connection to Econet network)

| | | | |
|------------------------|------------------|---------------------|----------------|
| Econet Starter Kit | £85(b) | Econet Bridge | £174(b) |
| Econet Socket Set | £29(c) | Printer Server Rom | £41(d) |
| File Server Level II | £75(b) | 10 Station Lead Set | £26(d) |
| Master FS Utility Disc | £17.25(d) | | |

ARCHIMEDES GAMES

| | | | |
|-----------|------------------|-----------------|------------------|
| Zarch | £17(d) | Minotaur | £11(d) |
| Hoverbod | £13(d) | Missile Control | £13(d) |
| Conqueror | £24.95(d) | Enthar Seven | £29.00(d) |
| Orion | £13(d) | Freddy's Folly | £13(d) |

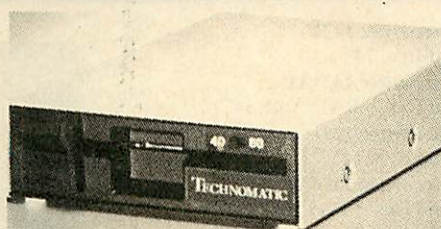
GRAPHICS/ART/CAD

| | | | |
|-----------------|----------------|---------------|----------------|
| Artisan | £30(d) | GammaPlot | £30(d) |
| Artisan Support | £17(d) | System Gamma+ | £59(d) |
| ProArtisan | £168(c) | AutoSketch | £69(d) |
| Presenter | £24(d) | SV SuperDump | £41(d) |
| SV SolidCAD | £41(d) | SV ARC-PCB | £167(b) |

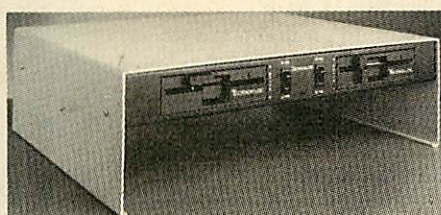
TECHNOMATIC

Techno House 468 Church Lane, London NW9 8TQ. Tel: 01-205 9558 Fax: 01-205 0190

TECHNOMATIC DISC DRIVES



TS 400



PD 800P

For users who do not need 40/80 switching capability, please specify as such and add suffix N on our product code. Drive price will be reduced by £5/mechanism.

A range of high quality high performance drives to meet the needs of all BBC Micro Users.

*All drives are fitted with high quality slim line ultra low power mechanisms capable of single and double density operation and offering fast track access and head setting times. Our confidence in their quality enables us to offer a **two year parts and labour warranty** on these mechanisms without any extra charge.

*5.25" floppy drives are fitted with 40/80 track switches as standard at no extra cost. The switches are located in the front and clearly marked to indicate the status at a glance.

*The mechanisms are set inside attractively styled, sturdy metal casings painted in BBC beige colour.

*All drives fitted with all necessary leads and are ready for operation on unpacking. The drives with the mains power supply are supplied with a mains lead fitted with a suitably fused 13A moulded plug.

*TECHNOMATIC drives stand out from other drives because of the high quality of construction and use of reliable switchmode power supply units on dual drives. High quality of construction ensures that our plinth drives which offer an elegant space solution do not sag or deform under the weight of a monitor.

5.25" Single Drives 40/80 switchable:

TS400 400K/640K

£80(b)

PS400 400K/640K with integral mains power supply

£90(b)

5.25" Dual Drives 40/80 switchable:

TD800 800K/1280K

£165(b)

PD800 800K/1280K with integral mains power supply

£175(b)

PD800P 800K/1280K with integral mains power supply and monitor stand

£189(a)

3.5" 80T DS Drives:

TS351 single 400K/640K

£69(b)

PS351 3.5" single drive with integral mains power supply in a 5.25" case.

£95(b)

TD352 Dual 800K/1280K

£126(b)

PD352 3.5" dual drive with integral mains power supply in a 5.25" case.

£139(b)

Combo Drives (5.25" & 3.5" drives)

PD853 with integral psu

£180(a)

PD853P with integral psu

£205(a)

DISC DRIVE MULTIPLEXER

For Master, B, B+ and any DFS/ADFS

TDM2 Two computers/one drive unit

£65(b)

TDM4 Four computers/one drive unit

£115(b)

TECHNOMATIC WINCHESTERS

Technomatic offer the most popular range of Winchester drives for the BBC Micro drives at competitive prices. The drives are fully compatible with Acorn ADFS system on BBC Master, models B and B+.

The single winchester drive cased in attractively styled metal enclosure of BBC matching beige are fan cooled and powered by switch mode power supply for quiet, efficient and reliable operation. Combination of floppy and winchester drives in our elegant plinth housing provides an ideal solution to space saving and ease of transferring data between floppies and winchester.

To enable the user, whether a novice or a professional obtain the most from the Winchester we include as standard the following utilities:

- ★ TREE PLAN: a utility to create an organised directory structure, display the structure on the screen and/or dump it to a printer.
- ★ Winchester formatter and verify program.
- ★ Help utility to transfer ADFS utilities from Master Welcome disc or ADFS utils disc.
- ★ Archiving routine to backup critical data onto floppies.
- ★ Copying DFS files to Winchester.

Additionally for the Master users, we also include the popular front end utility at no extra cost to provide an easy and efficient file management system. The entire contents of the drive are displayed on the screen on boot up, each file or directory appearing as an icon. The icon type indicates whether a directory or a file and type of data if latter. File can be loaded simply by pointing at the icon. Time and date are also displayed.

P30HD 30 Mb Winchester

£420(a)

P60HD 60 Mb Winchester

£575(a)

P404HP 30 Mb Winchester with 40/80T switchable 640K double sided floppy drive in plinth format

£609(a)

P604HP 60Mb Winchester with 40/80T switchable 640K double sided floppy drive in plinth format

£769(a)

MASTER COMPACT

128K RAM, 640K 3.5" DS Drive + Educ software and our bundled Educ/Fun package included

SYSTEM 1 Entry System

£310(a)

SYSTEM 2 with 12" Mono Monitor

£365(2×a)

SYSTEM 3 with 14" Col Monitor

£475(2×a)

2nd Drive Kit

£90(c)

Serial Kit

£25(d)

Mertec Adaptor

£35(c)

TV Modulator

£26(d)

Ext Drive Adaptor

£9(d)

Printer Lead

£7(d)

UPGRADE KITS

1.20S ROM

£15(d)

ADFS ROM

£26(d)

DNFS ROM

£19(d)

1770 DFS Kit

£49(d)

BASIC II ROM

£22.50(d)

Econet Kit

£55(d)

RAM/ROM EXPANSION

ATPL Board for Model B. Simple

to instal, no soldering. Allows

expansion to 15 Roms + 2*8K RAMS

£37(c)

ATPL Battery backup kit

£18(d)

ATPL Board for BBC+ (10 Roms)

£31(c)

3M FLOPPY DISCS

5.25" Discs in packs of 10

744 40T SS DD

£6.50(d)

745 40T DS DD

£8.00(d)

746 80T SS DD

£12.00(d)

747 80T DS DD

£11.00(d)

3.5" Discs in packs of 10

80T SS DD

£13.50(d)

80T DS DD

£15.00(d)

(Add £1 for library case packing)

BULK DISCS

50 5.25" 40 T single sided discs with sleeves in lockable box.

£25(b)

50 5.25" 80 T double sided discs with sleeves in lockable box.

£32(b)

50 3.5" 80T double sided discs with sleeves in lockable box.

£60(b)

FLOPPICLENE DRIVE HEAD CLEANING KIT

5.25" Kit with 20 disposable discs

£14.00(d)

3.5" Kit with 20 disposable discs

£14.75(d)

DISC STORAGE BOXES

DB340 Lockable 40 × 3.5"

£8.50(c)

DB550 Lockable 50 × 5.25"

£6.50(c)

DB570 Lockable 70 × 5.25"

£8.50(c)

DB5100 Lockable 100 × 5.25"

£10.50(c)

EPROMS/RAMS

2764-25

£2.80

27256-25

£6

27128-25 (12.5vVpp)

£4.50

27128-25 (21vVpp)

£6

27512-25

£9

6264LP-15

£6

These prices subject to change

(Carriage code d)

TECHNOMATIC

305 Edgware Road, London W2 Tel: 01-723 0233

PRINTERS

| EPSON | | |
|--------|---------|------------------|
| LX800 | £179(a) | LQ500 £275(a) |
| FX800 | £309(a) | LQ850 £439(a) |
| FX1000 | £419(a) | LQ1050 £599(a) |
| EX800 | £429(a) | LQ2550+ £1049(a) |
| EX1000 | £579(c) | |

GQ3500 Laser Printer £1249(a)

| | | | |
|------------------|---------|-------------|---------|
| Taxan KP815 | £159(a) | Taxan KP915 | £275(a) |
| Star LC10 | | | £189(a) |
| Star LC10 Colour | | | £249(a) |
| Star LC24-10 | | | £309(a) |

NATIONAL PANASONIC

| | | | |
|----------|---------|----------|---------|
| KXP1081* | £145(a) | KXP1082* | £172(a) |
|----------|---------|----------|---------|

(*includes Wysiwg ROM + Master Lead)

| | |
|--------------------------|----------|
| KXP3131 with 38K buffer | £245(a) |
| Canon PW1080A | £149(a) |
| Canon Laser LBP8-II | £1595(a) |
| Brother HR20 Daisy Wheel | £349(a) |
| Juki 6100 Daisy Wheel | £295(a) |
| Integrex Colour Inkjet | £529(a) |

PLOTTERS

| | |
|--------------------------------|---------|
| Hitachi 672XD A3 4 Colour HPGL | £499(a) |
| Plotmate A4S | £379(a) |
| Plotmate A3M | £549(a) |
| Roland 880 A3 Flat bed 8 col | £599(a) |

Variety of Plotter pens and accessories in stock.

Larger Plotters available. Please enquire.

EPSON LQ500

Epson's budget 24pin letter quality printer provides unrivalled print quality with two built in letter quality fonts and widest repertoire of type styles at low cost. Sans Serif and Roman or draft font can be selected from the front panel. Maximum resolution of 360 x 180 dpi. Friction and tractor as standard. Parallel interface. Designed for low noise operation 55dB(A). Introductory price incl. master lead

£275(a)

EPSON LX800

Epson's latest budget printer offers a host of new features all utilising Epson's unrivalled knowhow of printer technology and reliability.

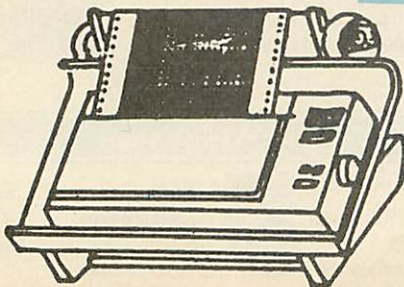
- ★ 180 cps draft/25cps NLQ ★ two modern fonts as std: Sans Serif and ROMAN. NLQ font selection from front panel ★ Tractor and friction feed
- ★ Single sheet guide with auto load switch. Original + 2 copies.
- ★ 3K input buffer with character downloading facility
- ★ Fully compatible with BBC & IBM graphics
- ★ Centronics interface as standard
- ★ Price including BBC master lead

£179(a)

PRINTER STAND

A new style printer stand with easy paper feed and paper separation, provides complete access to paper. Can be used with both top and bottom paper feed. Very space efficient.

£26 (b)



PRINTER BUFFERS SHARER & CONVERTERS

TSB 256 Auto Sharer/Buffer

256K buffer with 3 input ports. Each port scanned automatically every 10 secs until data found. PAUSE, COPY and RESET Facilities. Full spec on request.

£169(a)

Smart Printer Buffers

Facilities include: COPY upto 265 copies PAUSE, RESET, Self-Test.

For serial: X-on/X-off, ETX/ACK or DTR/DTS protocols independently selectable baud rate for each port

PP256 256K Parallel buffer

£169(b)

SS256 256K Serial buffer

£189(b)

Parallel Multi-Spoolers

Allows connecting 2 printers to 2 or 4 computers Butter allows quick dumping of data to free the computers

COPY allows upto 999 copies, SELF-TEST, PAUSE, CLEAR

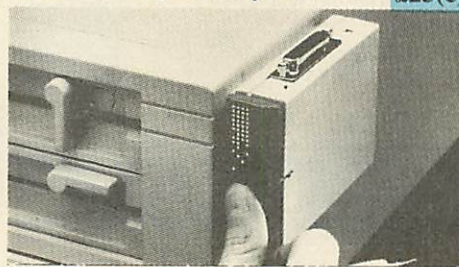
MS422 4computers/2printers 512K buffer £299(b)

MS223 2computers/2 printers 512K butter £199(b)

Compact Two Way Switch 2 computers to 1

printer or 2 printers to 1 computer Attaches to the side of a computer or a printer

£23(c)



Serial/Parallel/Serial Converters

Compact economical converters which support X-on/X-off, ETX/ACK, DTR/DSR protocols

C-PS Parallel/Serial converter

£35(c)

C-SP Serial Parallel converter

£35(c)

Add £49 to above prices for units with 64K buffer

Manual Printer Sharers:

(All lines are switched).

2 computers to one printer

Parallel

£25(c)

Serial

£25(c)

3 computers to one printer

£39(c)

£39(c)

4 computers to one printer

£45(c)

£45(c)

2 computers to 1 or 2 printers

£49(c)

£49(c)

Cable sets for above sharers available for all popular computers

BBC Computer Sharer: TCS26

1 computer to 2 printers fitted with BBC cable

£21(c)

Paper & Labels

Plain fanfold paper with microperforation:

2000 sheets 9 1/2 x 11"

£12(£3.50)

2000 sheets 14 1/2 x 11"

£18.50(£4.50)

1500 sheets A4 90gsm

£18.00(£4.00)

Labels/1000

Single Row 3 1/2 x 1 1/16" (d) Triple Row 2 1/16 x 7 1/16"

£5(d)

OHP Transparencies A4 (100)

£56(b)

PARALLEL PRINTER LEADS

BBC/Master (1.2m)

£5(d)

BBC/Master (2m)

£7(d)

Archimedes (2m)

£7(d)

Compact (1.2m)

£7(fd)

MODEMS

MIRACLE WS4000 V21/23

£129(b)

MIRACLE WS3000 V21/23

£244(b)

MIRACLE WS3000 V22

£379(b)

MIRACLE WS3000 V22 bis

£495(b)

Pace Linnet

£139(b)

(All modems are BABT approved)

BBC Data Cable for WS3000/4000

£10(d)

MIRACLE WS2000V21/23 & BELL stds

£92(c)

MONITORS

12", 14" and 20" MONITORS

Microvitec 1431

Std Res, 14"

£179(a)

Microvitec 1431AP

Std Res + PAL/Aud, 14"

£199(a)

Microvitec 1451

Med Res, 14"

£225(a)

Microvitec 1451AP

Med Res + PAL/Aud, 14"

£255(a)

Microvitec 1441

Hi Res, 14"

£359(a)

Philips 8833 14" RGB

Med Res, 14", high contrast screen, TTL/Linear input, Mono/Colour Switch Stereo Sound Input. Separate controls for brilliance and contrast.

£219(a)

Microvitec 2030CS

20" Standard Resolution RGB/Comp Video

£380(a)

Microvitec 2040CS

20" High Resolution RGB/Comp Video

£675(a)

TAXAN SUPER VISION 620

12" Hi Res/Hi Contrast Option to switch to green/amber BBC/IBM Compatible

£269(a)

TAXAN SUPER VISION 625

12" Super Hi Res and contrast RGB Monitor with option to switch to mono BBC/IBM compatible.

£319(a)

TAXAN 770+

MultiSysnc Autoscan 14", ideal for utilising the hi res modes on Archimedes. Our price includes a tilt & swivel stand

£485(a)

NEC MultiSync II 14"

Enhanced version of the original NEC MultiSync. complete with tilt & swivel base. Suitable for Archimedes and PC compatibles.

£479(a)

MONOCHROME MONITORS

PHILIPS 7752

14" green screen monitor.

This is a new addition to the Philips' popular mono monitors. Features include Flat screen. Inverse video switch, separate brilliance and contrast controls.

£85(a)

PHILIPS BM 7502

Hi Res green screen

£72(a)

PHILIPS BM 7522

Hi Res amber screen

£79(a)

Tilt & Swivel Stand for

Philips Mono

£6(c)

MONITOR ACCESSORIES

Microvitec Swivel Base

(14" plastic monitors)

£17(c)

Monitor Stand Models B & B+

£10(c)

Monitor Stand Master

£13(c)

Double Tier Stand Models B,

B+ or Master

£24(b)

Taxan RGB Lead

£7(d)

Microvitec Lead

£4(d)

Monochrome BNC/Phono Lead

£4(d)

Copy Holder Self Supporting A4

£15(c)

New general purpose tilt and swivel stand for 12" and 14" Monitors

£15(c)

TECHNOMATIC

Techno House 468 Church Lane, London NW9 8TQ. Tel: 01-205 9558 Fax: 01-205 0190

CAD/DRAWING PACKAGES

| | |
|---|------------|
| NOVACAD | |
| Cad Package for B, B+ & MASTER. (See page 5 for specification) | |
| Tracker Ball/Mouse Version (TM) | £49 (d) |
| TM Version plus Tracker Ball | £94 (d) |
| TM Version plus Mouse | £79 (d) |
| Plotter Driver Generator | £15 (d) |
| If purchased with Novacad | £12 (d) |
| MOUSE | |
| AMX MOUSE with SUPER ART (pse specify B, B+ or Master) | £59 (d) |
| STOP PRESS (Pagemaker) | £32 (d) |
| EXTRA/EXTRA (utility for the Pagemaker) | £19 (d) |
| MAX | £17 (d) |
| STAND ALONE MOUSE | £34 (c) |
| RB2 TRACKER BALL | |
| RB2 Tracker Ball with Icon Master (for B, B+ & Master) | £59 (c) |
| RB2 Tracker Ball with Cursor Control Rom (for Master only) | £59 (c) |
| RB2 Tracker Ball 'Stand Alone' for use with NOVACAD & other software) | £47 (c) |
| Cursor Control Rom for Master | £12.50 (d) |
| MIRRORSOFT FLEET | |
| STREET EDITOR | £35 (d) |

TIME WARP

Real Time Clock, Plugs into the user port, battery back up as standard, includes manual, demo software including a diary/planner application program

£29 (d)

BBC SOFT/FIRMWARE

DATABASE MANAGEMENT SYSTEMS

| | |
|----------------------------|---------|
| VIEWSTORE | £36 (d) |
| STARdataBASE | £39 (d) |
| MASTERFILE II | £17 (d) |
| ACORN OVERVIEW PACKAGE | |
| Special Offer (RRP £86) | £69 (b) |
| INTERBASE | £49 (d) |

WORD PROCESSORS

| | |
|--|---------|
| ACORN VIEW PROFESSIONAL (BBC) | £69 (c) |
| VIEW 2.1 | £35 (d) |
| VIEW 3.0 | £45 (c) |
| Double View Rom Version | £42 (d) |
| Double View Disc Version (for Master & Compact) | £33 (d) |
| VIEW INDEX | £12 (d) |
| VIEW PRINTER DRIVER GENERATOR | £8 (d) |
| VIEWSPELL | £29 (d) |
| DOT PRINT PLUS | £28 (d) |
| WORDWISE | £24 (d) |
| WORDWISE PLUS | £38 (d) |
| WYSIWYG PLUS | £21 (d) |
| SPELLMASTER | £42 (d) |
| INTERWORD | £36 (d) |
| WORDEASE | £24 (d) |
| SPELLCHECK III | £31 (d) |
| EDWORD II | £43 (c) |

SPREADSHEETS

| | |
|--|---------|
| VIEW SHEET | £36 (d) |
| WINDOMATIC (A Viewsheets Utility) | £15 (d) |
| VIEWPLOT | £22 (d) |
| INTERSHEET | £37 (d) |
| INTERCHART | £25 (d) |
| ULTRACALC | £26 (d) |
| MINI OFFICE II DISC Version | |
| For B & B+ 40T or 80T | £14 (d) |
| For Master 80T | £16 (d) |
| For Compact | £19 (d) |
| MINI OFFICE II ROM Version | |
| For Master, Compact, B+ & B | £43 (c) |
| MEGA 3Rom | £76 (b) |
| CC's integrated package offering Interword, Intersheet & Interchart on one 128K ROM. For Master, Compact, B+ & B | |

LANGUAGES

| | |
|--|----------|
| META ASSEMBLER | £145 (b) |
| TEAM DISASSEMBLER | £145 (b) |
| MACROM | £33 (d) |
| ACORN SOFT 'C' | £40 (c) |
| ACORN MICRO PROLOG | £62 (d) |
| ISO-PASCAL | £51 (c) |
| ISO-PASCAL STAND ALONE GENERATOR | £30 (d) |
| OXFORD PASCAL | |
| (40 or 80T) Specify B or B+ | £36 (d) |
| OXFORD PASCAL for Master | £52 (d) |
| ACORN LOGO | £46 (c) |
| LOGOTRON LOGO | £55 (c) |
| BBC PUBLICATIONS OPEN LOGO | £59 (c) |
| ACORN LISP ROM | £39 (d) |
| ACORN FORTH ROM | £39 (d) |
| ACORN COMAL ROM | £39 (d) |
| Advanced BASIC Disc (for B, B+ & Master + 6502 2nd Processor) | £26 (d) |
| MICROTEXT | £52 (c) |
| MICROTEXT PLUS | £229 (b) |

COMMUNICATIONS

| | |
|---------------------------|------------|
| TERMULATOR | £25 (d) |
| COMMSTAR II | £28 (d) |
| MAYA Comms Package | £49 (d) |
| See next page for details | |
| MODEM MASTER | £11 (d) |
| COMMAND | £34 (d) |
| MASTER TERMULATOR | £34.75 (d) |

UTILITIES

| | |
|---|-----------|
| ACORN ADFS ROM | £26 (d) |
| ACORN BASIC EDITOR | £24 (d) |
| MONITOR (BBC Pub) | £19 (d) |
| SLEUTH | £23 (d) |
| TOOLKIT PLUS | £31 (d) |
| TOOLBOX 2 (BBC Pub) Manual Cassette | £9.50 (d) |
| ACORN GXR GRAPHICS ROM specify B or B+ | £24 (d) |
| PRINTMASTER | £24 (d) |
| PRINTWISE | £24 (d) |
| DUMPMASER | £26 (d) |
| FONTWISE PLUS | £17 (d) |
| ADV TELETEXT UTILITIES ROM | £7.95 (d) |

COMPACT (all on 3 1/2" disc)

| | |
|-------------------|---------|
| ARTROOM | £27 (d) |
| FONTWISE + | £22 (d) |
| FONT EDITOR | £22 (d) |
| BETABASE | £27 (d) |
| WHITE KNIGHT MKII | £16 (d) |

BBC PUBLICATIONS EDUCATIONAL SOFTWARE

A series of programs developed in many cases alongside Radio & TV programmes by BBC's Education Department which supplement the classroom studies by moving and colourful displays helping in clear understanding of a variety of subjects. Some packages also include audio cassettes.

PRIMARY EDUCATION

| | |
|-----------------------|-------------------------|
| ASTRONOMY | £11 (d) |
| COMPUTERS AT WORK | Aud/EC/£16 (c) |
| PICTURE CRAFT | Disc £17 (d) |
| INTRODUCING GEOGRAPHY | Disc £16 (d) |
| MATHS WITH A STORY 1 | Cass £8 (d) |
| MATHS WITH A STORY 2 | Cass £8 (d) |
| NUMBER GAMES | Cass/EC £7.50 (d) |
| USING YOUR COMPUTER | Cass £24 (c) |
| THE HALL OF MIRRORS | Disc £13 (d) |
| MATHS | Disc + Aud Cass £17 (d) |

SECONDARY LEARNING

| | |
|--|-------------------------------|
| TECHNOLOGY & DESIGN Pt1 | £21.50 (c) |
| ELECTRIC FIELDS | £10.50 (d) |
| ADVANCED LEVEL STUDIES: STATISTICS | Disc £23 (d) |
| ADVANCED STUDIES: GEOGRAPHY | Disc £17 (d) |
| INSIDE INFORMATION | Prog Cass £10 (d) |
| | Book £8 (d) Audio Cass £5 (d) |
| OPEN LEARNING PACK | Disc/AudCass + book £36 (b) |
| SCIENCE TOPICS (ST) | |
| S.T.: WAVES | Disc £14 (d) |
| S.T.: RELATIONSHIPS | Disc £14 (d) |
| S.T.: BONDING | Disc £14 (d) |
| S.T.: ELECTROMAGNETIC SPECTRUM | |
| S.T.: ELECTRONICS IN ACTION | Disc £14 |
| S.T.: NEWTON & THE SHUTTLE | Disc £19 |
| S.T.: ECOLOGY | Disc/EC £19 |
| S.T.: POLYMERS | Disc/EC £19 (d) |
| S.T.: CLASSIFICATION & PERIODIC TABLE | Disc £20 (d) |
| S.T.: FOOD & POPULATION | Disc £20 (d) |
| SEC. SCIENCE | |
| MICROTECHNOLOGY | Cass £7 (d) |
| SEC. SCIENCE: THE | |
| MOLE CONCEPT | Disc/Aud/EC £16 (c) |
| BIRD SPY | Disc £13 (d) |
| GEORDIE Racer | Disc £13 (d) |

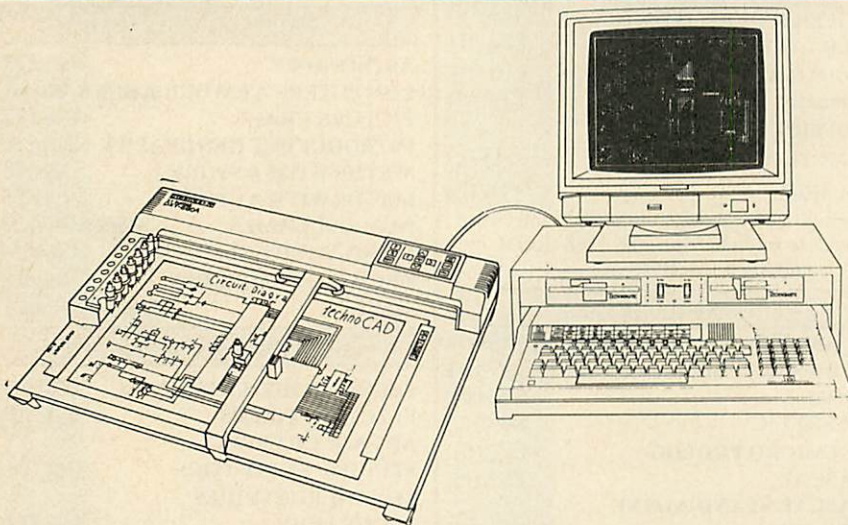
GENERAL

| | |
|---|--------------------------------------|
| VU-TYPE PROFESSIONAL | Disc £19 (d) |
| WHITE KNIGHT MK II (for 1770 DFS) | Disc £16 (d) |
| BATTLEFIELDS | Cass £8.50 (d) |
| A VOUS LA FRANCE | Disc £20 (d) |
| | Book £5.25 (d) Aud Cass (2) £7 (d) |
| ESPAÑA VIVA | Disc £19 (d) |
| | Audio Cass (2) £8 (d) Book £6.95 (d) |
| | (2) £7.50 (a) |
| DEUTSCH DIREKT | Disc/aud/EC £16 (c) |
| | Book £5.95 (d) |
| BLACK QUEEN | |
| A long awaited bridge game. (1770 DFS) | £13 (d) |
| BISMARCK | |
| History of the famous battleship. (1770 DFS) | £13 (d) |

All software in this advertisement has been tested to work with appropriate Acorn Disc Filing Systems only and we are unable to comment on compatibility with any other filing system. It will be the buyers responsibility to verify such compatibility.

technoCAD

COMPUTER AIDED DRAUGHTING
FOR THE BBC MASTER



- ★ An easy to use CAD system with pop up menus providing a user friendly interface at all stages of operation.
- ★ Input can be configured for keyboard, mouse or tracker ball. Only three keys to input all commands if input from keyboard.
- ★ Virtually no limit to the size or complexity of the drawing that can be created. Powerful zoom facility allows a A0 size drawing to be viewed from single screen or a single screen can be enlarged to AD size. Continuous planning across a drawing by specifying co-ordinates.
- ★ Lines, arcs and circles can be drawn with ease and in user defined colour and thickness. These can be modified at any stage of drawing.
- ★ User definable grid and scale, together with on screen display of dimensions, and co-ordinates enable easy and accurate drawings.
- ★ Multi layering capability with 8 levels allows superimposition of drawings.
- ★ Powerful icon utility allows any shape or drawing to be saved to a library as an icon. Icons can be recalled from the library and placed anywhere on the screen drawing at required scale and orientation.
- ★ Toolkit program allows customisation of files, utilities and peripherals.

- ★ Drawings can be scaled on screen to suit the plotter or printer in use. A maximum resolution of 0.01mm is available. Pre-configured drivers for many popular plotters and a driver generator for any BBC compatible plotter is included. Printer drivers for Epson 9 pin and 24 pin printers are included as standard as is the facility for installing drivers for other printers.

**FREE EVALUATION DISC
AVAILABLE
Phone for your copy
£99(c)**

PRINTER ACCESSORIES

| EPSON ACCESSORIES: | |
|-----------------------------|----------|
| 8143 RS232 | £32 (d) |
| 8148 + RS232 + 8k | £79 (d) |
| IEEE 488 | £40 (d) |
| Apple II | £40 (d) |
| Colour option of EX800/1000 | £55 (d) |
| TRACTOR FEEDERS | |
| LQ800 | £44 (b) |
| LQ1000 | £55 (b) |
| LQ850 | £70 (b) |
| LQ1050 | £85 (b) |
| LQ2500+ | £90 (b) |
| EX800 | £85 (b) |
| EX1000 | £90 (b) |
| SHEET FEEDERS: | |
| LQ800/850 | £159 (b) |
| LQ1000/1050 | £189 (b) |

| EX800/FX800 | £159 (b) |
|-----------------------------------|------------|
| EX1000/LQ2500+ | £225 (b) |
| FX1000 | £189 (b) |
| Ribbons: | |
| FX/FX100/100+, FX105 | £7 (d) |
| RX/FX80, FX85/800 | £4 (d) |
| LX80/LX800 | £4.50 (d) |
| LQ800/850 | £6 (d) |
| LQ1000/1050 | £7.75 (d) |
| EX800/1000 Black | £7.50 (d) |
| EX800/1000 Colour | £16.80 (d) |
| H180 Pen Set (Aqueous/Ball point) | £8.25 (d) |
| HITACHI 672 Plotter | |
| Aqueous Pen Set six pens | £18.50 (d) |
| Oil Based Pen Set six pens | £25.00 (d) |
| TAXAN CANON Accessories: | |
| Ribbon, KP810/815/910/915 | £6 (d) |

Star Printer

| NL10/LC10 Sheet Feeder | £55 (b) |
|--------------------------------|-----------|
| NL10/LC10 Ribbon | £4.50 (b) |
| National Panasonic KX P1080/81 | |
| Spare Ribbon | £4.50 (d) |
| KXP3131 Tractor | £90 (a) |
| KXP3131 Sheet Feeder | £189 (a) |
| KXP3131 Ribbon | £4.50 (d) |
| JUKI 6100 | |
| Tractor Feed | £149 (a) |
| Sheet Feeder | £219 (a) |
| Ribbon (Carbon) | £2.00 (d) |
| BROTHER HR20 | |
| Sheet Feeder | £229 (a) |
| Tractor Feed | £116 (a) |
| Spare Ribbon Nylon | £3.00 (d) |
| Spare Ribbon Carbon | £4.50 (d) |

BOOKS

No VAT Carriage Code (c)

LANGUAGES

| | |
|------------------------------|--------|
| 6502 Assy Lang Prog. | £19.95 |
| 6502 Programming | £13.95 |
| 8086 Book | £23.95 |
| Acorn BCPI User Guide | £15.00 |
| Acorn FORTH | £7.50 |
| Acorn LISP | £7.50 |
| Acorn ISO Pascal Ref Manual | £10.00 |
| Intro to COMAL | £10.00 |
| Intro to LOGO | £7.50 |
| Micro Prolog Ref Manual | £10.00 |
| Introduction to Turbo Pascal | £14.95 |
| Prog the Micro with Pascal | £8.50 |
| The Supervisor's BBC Micro | £10.95 |

BBC MICRO GUIDE BOOKS

| | |
|----------------------------|--------|
| Inside Information | £8.95 |
| Maths Prog in BBC Basic | £7.95 |
| The Friendly Computer Book | £4.50 |
| Toolbox 2 | £10.95 |

ARCHIMEDES

| | |
|-----------------------------|-----------|
| Archimedes Reference Manual | £29.95(b) |
| ARM Assembly Language Prog | £12.95(b) |
| Inside Autosketch | £15(b) |

PROGRAMMING/UTILITY

| | |
|---------------------------------------|--------|
| Advanced Sideways Ram User Guide | £9.95 |
| Advanced User Guide (BBC) | £15.95 |
| Applied Assembly Language on the BBC | £9.95 |
| BBC Micro Advance Programming | £9.95 |
| BBC Micro Ref Guide (B Smith) | £10.95 |
| BBC Micro Sideways ROM's RAM's | £9.95 |
| Guide to the BBC Rom | £9.95 |
| Beginners Guide to W.P. | £7.95 |
| Mastering Assembly Code | £8.95 |
| Mastering Interpreters & Compilers | £14.95 |
| Master Operating System | £6.95 |
| Mastering View, Viewsheet & Viewstore | £12.95 |
| View by B. Smith | £12.95 |
| View 3.0 User Guide | £9.00 |
| Viewstore User Guide | £9.00 |
| Viewsheet User Guide | £9.00 |
| Wordwise Plus | £9.95 |

SOUND & GRAPHICS

| | |
|--------------------------------------|-------|
| Computer Graphics & CAD Fundamentals | £9.95 |
| Mastering Music | £6.95 |

DISC DRIVE SYSTEMS

| | |
|--------------------------------|--------|
| Advanced Disc User Guide | £16.95 |
| Disc Book | £3.50 |
| Disc Programming Techniques | £7.95 |
| Disc Systems | £6.95 |
| File Handling on the BBC | £6.95 |
| Discovering Disc Drives | £POA |
| Practical Disc File Techniques | £5.95 |
| Mastering the Disc Drive | £12.95 |
| Mastering DOS plus | £12.95 |

APPLICATIONS

| | |
|--------------------------|-------|
| Interfacing Proj for BBC | £6.95 |
| BBC and Small Business | £5.75 |
| The Software Business | £5.50 |

Mastering Operating System

| | |
|------------------|-------|
| (David Atherton) | £6.95 |
|------------------|-------|

INTEGREX INK JET COLOUR PRINTER

| Spare Ink Cartridge Black | £8 (d) |
|--|----------------|
| Spare Ink Cartridge Colour | £14 (d) |
| Paper Roll | £7 (d) |
| Printer Leads: | |
| BBC Parallel Lead (1.2m) | £6 (d) |
| PAPER & LABELS | |
| Plain Fanfold paper with micro perforations: | |
| 2000 sheets 9½" × 11" 60 gsm/sq m | £12 (£3.50) |
| 2000 sheets 14½" × 11" 60 gsm/sq m | £18.50 (£4.50) |
| 1500 sheets A4 90 gsm | £18 (£3.50) |
| Labels/1000: | |
| Single Row 3½" × 1½" | £5.25 (d) |
| Triple Row 2½" × 1½" | £5 (d) |

TECHNOMATIC

MAIL ORDER & RETAIL

Techno House

468 Church Lane

London NW9 8TQ.

Tel: 01-205 9558

Fax: 01-205 0190

RETAIL SHOPS

468 Church Lane. London NW9 8TQ.

Tel: 01-205 9558 Fax: 01-205 0190

(close to Dollis Hill →)

West End Branch

305 Edgware Road. London W2

Tel: 01-723 0233. 01-402 0444

(near Edgware Road Tube) →

For fast delivery telephone

your order on 01-205 9558

using VISA/Access Card



Orders welcome from

government depts &

educational establishments

All prices ex VAT

Prices are subject to

change without notice

Please add carriage

(a) £8.00 (Courier)

(b) £2.50

(c) £1.50

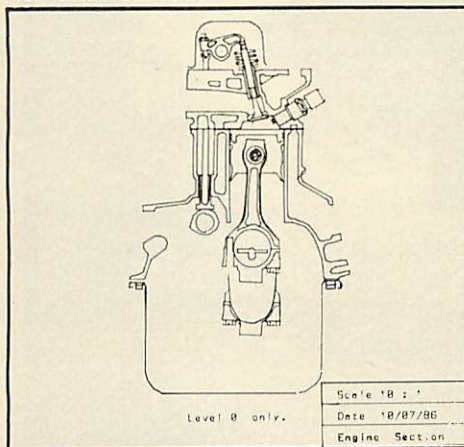
(d) £1.00

NOVACAD

Computer Aided Draughting System

Novacad can drive a plotter to produce drawings of highest quality... Novacad is excellent. It is flexible, genuinely easy to operate without much practice, and a pleasure to use. Beebug Dec 86

A sophisticated CAD package with unique facilities. Thousands of Novacad packages are being used in widely differing fields ranging from industries for producing engineering drawings to accountants offices for producing flow charts. Architects, engineers, plumbers, kitchen planners and many other professions requiring easy to use facilities for producing high quality output are making extensive use of Novacad's unique features. Novacad is proving to be an invaluable teaching aid in technical schools simply because of the ease with which it can be used.



Novacad is compatible with all models fitted with Acorn DFS. Hardware requirements can be minimum; single drive and FX80 compatible printer are enough to get started, though its performance is enhanced considerably by use of 6502 2nd processor, dual drive and to a degree with B+ and Master's shadow ram.

The major features offered are:

- ★ Simple and easy to use with logical command sequence.
- ★ A large drawing area (approx 15 screens)
- ★ Unique ability to create complex icons made up of upto 500 lines instead of the usual 15 to 20 pixels, store them in a library and recall them at different scales and orientations.
- ★ Zoom facility.
- ★ Create multi level drawings.
- ★ Text entry at any 90° orientation anywhere on the screen.
- ★ Grid scaling and locking, displacement measurements.
- ★ Printer routine for FX80/100 compatible printers
- ★ Cursor control from keyboard/tracker ball/mouse.

Plotter driver generator available as an optional utility, configures a routine for any BBC compatible plotter. Pre configured routines for popular plotters like Epson HI80, Hitachi, Plotmate are included. Drawings can be scaled to maximum plotter size.

NOVACAD T/M Version

NOVACAD T/M + Plotter DG

Plotter Driver Generator

£49(d)

£61(c)

£15(d)

EpromRyter

*Highly sophisticated & Advanced Programmer

*All current single rail eeproms handled

*State of the Art Programming Algorithms



EpromRyter is a powerful eprom programmer designed for use with the BBC Master Computer. It takes full advantage of the latest developments in the eprom technology and the extra facilities on the Master to provide fast, simple and efficient programming and editing facilities.

The software is totally menu driven and on screen help messages make the programming simple for both specialists and novices alike.

The EPROMRYTER interfaces with the Master through 1MHz bus. It is mains powered with its own psu. 3M Textool zif socket has been fitted to ensure consistent and reliable service over long periods.

The single rail eeproms handled by the EpromRyter are:

● 2716 2732 2764 27128 27256 27512 27513 27011

2516 2532 2564 (NMOS & CMOS)

● One time eeproms P27XXX, 87CXXX etc.

● Also A suffix eeproms such as 27XXXX

£89(b) + VAT

META Ver III ASSEMBLER

"All the good features you would expect to find in a good source code editor are present ... Meta assembler lives in a different world. It is structured to work with any new processor ... as new instruction sets can be added ... as needed ... has a well featured editor with colour highlighting, a sound modular approach." Acorn User October 1986

- Assembles for over 30 popular processors, including Z80, 6800/01/02/04/05/09/11 etc - and 68000 - using native mnemonics for each processor, eg LD A, (HL) for Z80 and MOV A0, \$1000 for 68000 etc.
- Fully integrated Editor: four field, all search, search/replace, block copy, delete, move, marked save, load etc.
- Compatible with Portal Eprom Emulators and Team Disassembler.
- Send object code in Intel Hex, S-Record, straight binary etc. down to discs, RS232, parallel port, Eprom Emulators etc - all during Assembly.
- Over 50 directives included as standard: handling nestable macros, conditional assembly and twenty types of table definition directives.
- 32 bit labels; 31 character names. Arithmetic and Boolean arithmetic to 32 bits.
- Modular source code with numeric and string parameter passing.
- Serial communicator area with eight options lines: echo, control code trap, LF suppression/addition etc.
- Over 500 in use throughout the world in universities and many different industries.
- Two 16K Roms, two 80 track discs, A4 ring-bound manual, function-key strip.

£145(b)

EPROMER II

A proven Eprom programmer for BBC Model B and B+ with thousands in use in industry, educational and R&D establishments. It offers many of the powerful features of the EpromRyter and can program all single rail eeproms upto 27256. Full details on request. £89(b)

PORTAL EPROM EMULATORS

- Emulates 2716, 2732, 2764, 27128, 27256, 27512 eeproms at 150ns Access time.
- Load at 4Kbytes/second - No "erase" time.
- 28 pin header plugs into Eprom socket on target system - status monitored on 13 Leds.
- Fully software controlled from Meta Assembler.
- 100 times faster than standard EPROM program/erase cycle.
- Fully CMOS compatible; draws no power from target system.
- Four portals may be independently programmed off same user-port cable.
- Complete with all cables, manual and disc.

PORTAL 512 (2716, 2732, 2764, 27128, 27256, 27512). £245(b)

TEAM DISASSEMBLER

The third part of the Universal Development System: a Meta labelling disassembler.

Supports 1802, 8080, 8085, #HD64180, Z80, 65XX (includes 65 col, 6511 etc), 68XX (includes 00, 01, 02, 03, 08 etc):

- Up to 64K of object code translated back into META compatible source code modules: labels automatically inserted on all jump targets, memory references etc.
- Pre-editing stage allows marking of object code areas as byte, string, word, long word etc, tables. These areas disassembled into appropriate directives instead of garbage mnemonics.
- Reconstituted source code ready for immediate re-assembly by META.
- Omniversal search/replace for re-naming arbitrary label names with meaningful ones.

£145(b)

This advertisement can only show an example of the range of products stocked by Technomatic. So send for our latest BBC catalogue providing detailed information and prices on BBC Computer Systems, Peripherals, Software and Books. To obtain your free copy please complete and return the coupon below.

Technomatic is a BBC Computer and Econet Referral Centre providing a professional and reliable service to the BBC user.

NAME

ADDRESS

.....

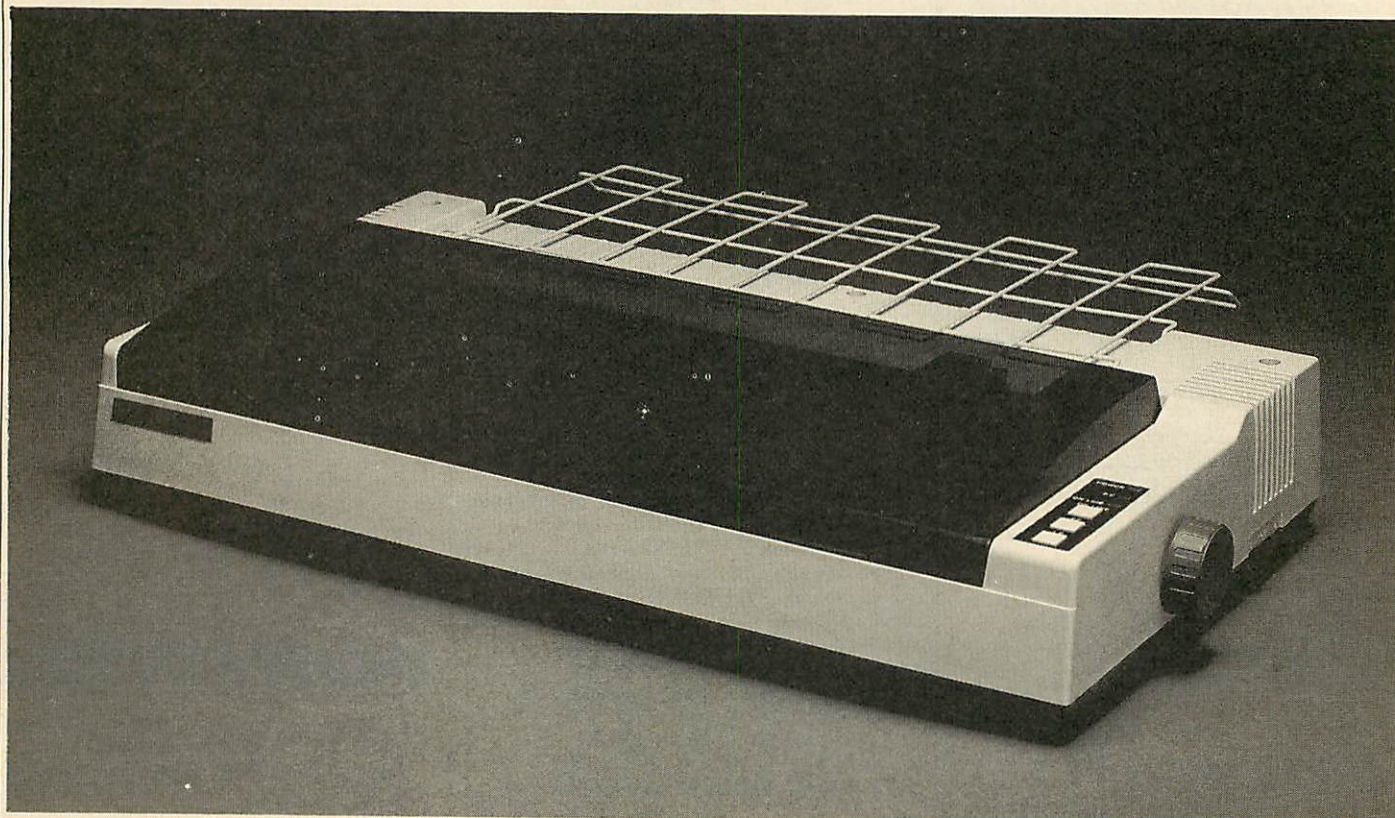
.....Post Code

1/89

Return to Technomatic Ltd, 17 Burnley Road, London NW10 1ED

OFFERS

136-COLUMN PRINTER



Start printing with Acorn User's wide-carriage printer

Even with the 35 per cent EEC anti-dumping duty added to the price of our special, high-quality 136-column Sakata wide-carriage printer, it is still unbeatable value at £279 inclusive of VAT and delivery. A price which is still £100 under the recommended retail price.

The Sakata 5500 printer is Epson FX-compatible. It offers the following features: Pica, Elite and NLQ fonts plus a downloadable character set; a 3k printer buffer; friction and tractor feed for paper up to 16 inches wide; graphics modes compatible with *Acorn User's UserDump* ROM; super and subscripts; bold and italics.

The printer is both fast and quiet, printing at a rate of 180 cps (draft mode) or 40 cps (NLQ mode) with a noise level of less than 55 decibels.

The Sakata 5500 printer takes ribbons which are easily obtainable. We are supplying each printer with a free 1.5 metre BBC printer cable, a plug, a 12 month guarantee and a supplement for the BBC. Post the coupon today.

Please send me _____ Sakata 5500 printers at £279.

I enclose my cheque/postal order for £ _____
made payable to **Redwood Publishing Ltd**

Please charge my Access/Barclaycard £ _____

ACCOUNT NO.

EXPIRY DATE

NAME _____

ADDRESS _____

POSTCODE _____

SIGNED _____ DATED _____

Send this coupon with your remittance to **Printer Offer, Acorn User Merchandising**,
20-26 Brunswick Place, London N1 6DJ. Or fax your order to 01-490 0494.

EXCLUSIVE ACORN USER OFFER

HINTS & TIPS

SPEED AND SAFETY

Focusing on the Electron, with advice on how to save files, speed up printer output, plus a one-line label search program, and more

David Atherton

£10 ELECTRON FAST PRINTING

Brian Ross of Glasgow has sent in a couple of tips for Electron owners, showing that there are still many undiscovered points about the machine. The first item is on speeding up printer output, particularly graphics.

Interfacing a printer to an Electron is done almost exclusively using the Plus 1 interface. This works well for text printing, but the print speed is very slow for screen dumps when compared to a BBC micro using the same printer. I first thought that this was due to the slow speed of the Electron, but adding a Master RAM board did little to increase the speed of printing. Perhaps the interface was at fault.

The explanation is that the Plus 1 uses ROM polling to determine if the printer is ready to receive another character, as opposed to the BBC micro's method of using interrupts. Since ROM polling takes place only 100 times per second, this is the maximum output speed to the printer - 100 characters a second. The implication is that there is little point in connecting a printer which can print more than 100 cps since the interface will become a bottleneck.

Secondly, this explains the slow screen dumps - in double density graphics mode, 960 bytes are sent for each line. This will take nearly 10 seconds per line. Add to this the time taken to actually print the line, and there lies the explanation as to why screen dumps are so slow.

The answer to this problem is to ignore the Plus 1 printer software and access the interface hardware directly. The parallel port on the Plus 1 resides at location &FC71. The parallel interface busy flag is contained in bit 7 of location



Speed increases for the Electron

&FC72. Therefore the coding (in Basic equivalents) should be:

```
DEF PROCprint (char)
  REPEAT UNTIL (?&FC72 AND
  D &80)=0
    ?&FC71=char
  ENDPROC
```

However, after some experimentation, it became evident that some characters were being missed. This is because there is a very short delay between a character being sent and the busy flag going high. If the output routine is called during this period, then the printer will appear not to be busy even when it is; the character will be sent but not printed.

The solution is to employ a short delay at the beginning of the output routine. Translated to assembler this becomes the code in the box.

Thus instead of the code:

```
LDA #1
JSR oswrch
LDA char
JSR oswrch
```

you should use:

```
LDA char
JSR output
```

The speed increase is dramatic. I have adapted the standard mode 0 screen dump from Ian Birnbaum's Electron book *Assembly Language Programming*. The program as it stands takes three minutes 26 seconds to run (one minute 21 seconds for mode 4). My modified

versions using only the technique described above take one minute 20 seconds and 54 seconds respectively, almost doubling the speed. The timings were taken using an Electron with Master RAM board and an Amstrad DMP2000 printer.

The vast majority of published screen dump programs have a separate subroutine for output, so that the VDU 1

```
.output      STX temp
              STY temp+1
              PHA
.busyloop    LDX #2
.dloop1      LDY #0
.dloop2      INY
              BNE dloop2
              DEX
              BNE dloop1
              BIT &FC72
              BMI busyloop
              PLA
              STA &FC71
              LDX temp
              LDY temp+1
              RTS
.temp        EQUW 0
```

Code resulting from short delay

can be dealt with separately. Often this will be entered with the character in the accumulator, which is then pushed onto the stack. The routine will typically read:

```
PHA
LDA #1
JSR oswrch
PLA
JMP oswrch
```

and this routine should simply be replaced with my copy above.

£5 SAFE FORMATTING

Another tip from Brian concerns the use of disc formatters and the fact that, if your controller is a 1770 chip, they destroy the data currently in memory.

SOFTWARE UPDATE....

M/B Software

| | |
|-----------------------|--------|
| Design 7+ | £8.60 |
| Desrom + | £11.20 |
| Desfax | £17.40 |
| Master copy Disc..... | £11.20 |
| Mastercopy ROM | £13.00 |
| Master Fax | £26.00 |
| VU-FAX Software | £45.00 |

SYNERGY

SHAREMASTER (BBC & MASTER)

The professional investment analyst and portfolio reporting system£99.95

CONSUMABLES

| | |
|------------------------------|--------|
| 27C128 16k CMOS EPROMS | £4.20 |
| 5.25 Floppy Discs x 10 | £6.00 |
| 3.5 Floppy Discs x 10 | £10.00 |

REVIEWS...

VU-FAX is a teletext system. It lets you create, edit and display up to 1000 Mode 7 screens in a variety of ways. That's interesting enough in itself, but the pages in Vu-Fax can be cycled through at the rate of around 20 pages a second.

Such speed and capacity is only possible if the system uses ram, and as we're talking about an ordinary BBC (B, B+ or Master) and not Archimedes, how is it done? Simple — with Morley's ram disc.

Operation is simplicity itself and it's transparent in use — apart from an almost magical increase in speed. For example, a 20k Mode 1 screen loads in around 0.2 seconds as opposed to the 3 to 4 seconds it would take from a floppy disc.

MICRO USER

The Morley Teletext Adaptor can capture teletext information and software broadcast by the BBC (Ceefax) and ITV (Oracle) through a standard television aerial and display them on an ordinary TV set. The advantage over teletext by phone is that, once you've bought the hardware, the software comes free and there is no subscription charge.

In terms of price, performance, future expansion possibilities and those little touches that show thought for the end user, I would recommend the Morley unit.

ACORN USER

NO writer of software reviews should be without one — this was my conclusion after only half an hour with this clever add-on. Morley Electronics has added software to a rom cartridge from Care Electronics and come up with a package with no clear rival. The cartridge contains a 16k eeprom for the software, and a small ram chip to store the user-defined instructions. There is a miniature push button on the top of the cartridge which activates a previously determined sequence of commands.

MICRO USER

A very wide range of possible uses make this utility live up to its name. A really excellent buy for Master owners.

Meet the Morley Family...

Teletext Adapter

The adapter is housed in a plastic disc drive style case, similar in colour to the BBC micro. It connects to the User Port via a 4-way ribbon cable and can take its power either from the computer or from our optional power supply.

The unit comes with the ATS (advanced teletext software) written for us by the BBC. The HOLD PAGE and REVEAL features are implemented, and pages can be saved to disc under your own file names.

Telesoftware is catalogued and selected from the Menu page, and the programs are easily downloaded.

THIS IS THE BIGGEST SELLING TELETEXT ADAPTER CURRENTLY IN PRODUCTION WORLD-WIDE, AND COMES WITH A FULL MONEY BACK SATISFACTION GUARANTEE.

| | |
|-----------------------|---------|
| Adapter BBC/Master | £104.20 |
| Adapter Compact | £120.00 |
| Adapter RML Nimbus | £104.20 |
| Optional Power supply | £8.80 |
| Teletext Utility Disc | £5.20 |

EPROM Programmer V2

This state-of-the-art unit, allows programming of 2764, 27128 and 27256 EPROMS both 12.5 and 21 volt. Totally under software control it is believed to be one of the fastest programmers available today.

The comprehensive user-friendly software included in the package has two main parts. The first allows EPROMS to be read, programmed, verified, and edited, also allowing a ROM image to be loaded or saved. The second is a full ROM management system in its own right, which has a host of useful features and routines, such as KILL and RESURRECT ROM to disable or enable a sideways ROM, dump ROM image to buffer or disc, move ROM image in buffer to sideways RAM, and VIEW-SEARCH any sideways ROM.

£30.00

Eprom programmer utility disc - Put all your favourite routines into Sideways Rom, both BASIC and M/Code allows multiple programmes up to 16k with separate * commands for initialisation and help.

£5.20

Master Board "AA"

At long last the add-on all MASTER users have been waiting for, an internal ROM board.

No more need to turn the computer off to insert the cartridge containing the ROM you need to debug the program in memory.

The all new MORLEY MASTER BOARD "AA" allows you to have up to 8 x 16k and 4 x 32k extra Roms installed inside your MASTER and still leaves the cartridge slots free. This in effect allows your MASTER to support as many as 24, 16k ROMs installed permanently, with the

addition of your standard 4 x sideways ram banks and four banks by using cartridges.

A staggering 32 ROM images installed and accessible at any time.

Included in the package is a utility ROM which has many useful features including a clever file transfer program that transfers files between DFS and ADFS formats or vice versa.

£40

The Latest Arrival...

The Morley range of Winchester Drives are completely compatible with all BBC's, B+'s and Master computers fitted with ADFS.

Each unit comes complete with a utility disc containing format, verify, archive, initialise and an intelligent file copy including DFS files to hard disc.

Finished in high quality colour co-ordinated case with a whisper quiet internal fan and switch mode power supply.

Superb quality and competitive cost - in a word - "Morley"!

| | |
|-------------|--------|
| 20 Megabyte | £370 |
| 30 Megabyte | £420 |
| 40 Megabyte | £500 |
| 60 Megabyte | P.O.A. |

RAMDISC

Due to the rise in prices of dynamic RAM chips we only have a limited stock of the 1 megabyte version of this device left. Special offer price while stocks last.

£150.00

Master Cartridge

| | |
|----------------------------------|--------|
| from Care | |
| Dual cartridge 2 sockets | £9.00 |
| Quad cartridge 4 sockets | £14.00 |
| Duet cartridge 2 x 32k sockets | £12.00 |
| 32k non-volatile ram cartridge | |
| ideal for Spellmaster dictionary | £33.00 |

Software

We now stock a full range of computer concepts software and will gladly populate your 'AA' board or cartridge before despatch.

Master Smart Cartridge

THE MORLEY/CARE SMART CARTRIDGE

The Smart Cartridge will at the press of a button halt a program running in memory and execute any one of a host of useful built-in, or user defined procedures, and once completed will return to the program and continue where it left off. The only limiting factor with this device is the programmers imagination.

Some of the built-in features (at the press of a button):

*Autosaves computer's entire memory.

*Freeze program at any point.

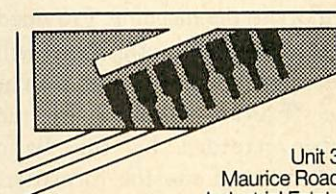
*Screen dump (any mode) to printer or disc.

*Allows most protected software to be backed-up including tape to disc and disc to tape.

*User friendly menu driven software etc.

£30.00

MORLEY
E · L · E · C · T · R · O · N · I · C · S



Unit 3
Maurice Road
Industrial Estate
Wallsend, Tyne and Wear NE28 6BY
Telephone: Tyneside (091) 262 7507

VAT: UK customers please add 15% VAT to cost incl. carriage.

CARRIAGE £1 on all orders. £3 on larger items (Adapters etc).

To order:

By Post:- Enclose cheque made payable to Morley Electronics Ltd. Or credit card:
By Phone:- quoting your Access Visa number.

Goods usually despatched by return. Government and Education orders welcome.

COMING SOON...

Master Speech Cartridge

HINTS & TIPS

This is because of the way the 1770 controller performs formatting, and applies to both BBC micros and Elks.

The only suitable facility available on the chip is 'write track', a command which writes a block of memory out to a whole track on the disc. Formatting programs build up an image of track data, including header marks, CRC bytes and so on in memory, and then in a single operation, write out the whole chunk of data to disc. The data occupies about three or four kilobytes, which is too much to put in a reserved area, so all 1770 formatting programs put the data in main RAM.

It is particularly frustrating when you have a full disc and no formatted discs to hand – you can't save your current file, and formatting destroys the program in memory. The ADFS 'COMPACT' utility allows the memory used to be specified, so if you know what you are doing, you can steer it clear of your data in memory. But "FORMAT" doesn't allow you to do this. Virtually all 1770 formatters use memory from OSHWM upwards, so if you could raise OSHWM above the top of your program or other data you could often preserve it and still format a disc.

Brian points out that you can indeed do this. There is a command, *FX180, which will alter OSHWM. If the data in question is a Basic program, type:

```
PRINT(TOP DIV &100)+1
```

which reports (in decimal) the first clear page of memory in the machine. Provided this is lower than about 119, there will still be sufficient space for the format map. Type *FX180, followed by the page number returned by the Basic command above, and run the formatter. Select mode 6 (or mode 7 on BBC micro) before doing any of this.

If you are using an Electron, you mustn't be in modes 0 or 3, or the disc system will be unreliable. And you must turn off the cursor (with VDU 23,1,0;0;0;0;), in case some screen RAM is used, because the Electron's software cursor slightly alters screen memory.

After formatting the disc, save your data immediately, and then press Break to reset the value of OSHWM. Alternatively, if you know what the normal value is (type PRINT PAGE DIV &100 when you switch on your machine), you can just reset it, by using *FX180 again.

It is feasible to use this method with

the *View* family and other programs, but you will have to work out the top of the text by using the 'Bytes Free' count on the command.

£10 WORDWISE FILE SAFETY

```
Words-127 Characters free-25540 I
REM Grandfather-Father-Son
REM by Julia M.E.Gwyther
REM for B/B+/M/C with Wordwise Plus
REM (c) Acorn User Jan 89
CLS
PRINT " Save latest text as SON"
PRINT "
PRINT "Drive 0 Directory R will be
used"
PRINT "Do you want to proceed?"
PRINT "Type Y or N"
G$=GCK$
IF G$(">Y" AND G$(">N") THEN PROCnosave
REM rename and save
PRINT " Save routine"
PRINT "
PRINT "Deleting GRANDAD"
```

Program keeps three latest copies of a file

Julia Gwyther from Bristol uses *Wordwise*, and wanted to make sure that she never lost her files. However, ordinary regular saving of files has a problem, in that you might save a file and then decide to reinstate some text you deleted before saving. Julia has written a short but very effective *Wordwise Plus* segment program which overcomes this difficulty by using the Grandfather-Father-Son method of taking backups.

This is a method familiar to large computer system programmers, whereby when a backup is taken, the previous backup is not overwritten or destroyed, but saved, as are all the previous backups. So you can go back and refer to any earlier version of the file, within reason. Julia's program keeps three copies; the latest version, and the two before that.

To use Julia's program, load it into a segment, say segment zero, before you start work, achieving this by typing in and saving the program under the name GDS, and including the lines:

```
SELECT SEGMENT 0
LOAD TEXT "GDS"
...
SELECT TEXT
```

in a !BOOT file on your work disc. Also on the disc must be three files called R.Son, R.Dad. and R.Grandad. Their contents are irrelevant, and they can be empty files – you can create these by saving a *Wordwise* segment or the text area with nothing in it.

Soon after starting work, press Shift-fo to make a security copy of your work –

this will invoke Julia's program. Now the existing files move down the generations. The Grandad file, the oldest version, is deleted, the Dad file becomes Grandad, the Son file becomes Dad, and a new Son is created containing the text at that point. This is achieved by simple Delete and Rename commands, but because it is all in a segment, you avoid using those commands directly. It saves trouble and avoids the possibility of mistakes.

Also, because of working under a managed system, your discs are not filled up with lots of old copies of your text. Using this system removes the necessity to delete old versions of a file.

£10 FADE TO BLACK

On many other brands of computer, a popular routine is a 'fade to black', a routine which blanks the screen if there is no keyboard activity after a certain time. The program supplied in the yellow pages provides this facility for a BBC micro, Master 128 and Compact.

If you type in the listing, and set the value of the variable 'seconds' to the number of seconds of inactivity before the system fades (from 0.1 to 1300 seconds are acceptable), then the program will assemble a machine code routine called 'BLACK', installed by *BLACK.

Once active, carry on working as normal, but the screen will instantly vanish if you don't touch the keyboard for the required number of seconds. Pressing any key restores the display at once without ill-effect. If you have a reasonable setting, such as the default, 30 seconds, this will mean that while you are working, you will never notice the feature, but if you leave the keyboard, the screen will go blank.

There are two uses for such a program. The first is to prevent monitor 'burn-in', which is the effect which occurs when you leave a monitor displaying the same image for a long time. The image gets burnt as a permanent 'shadow' on the screen. Though I've no evidence for this, it seems to be worse on amber monitors than on green or colour, and it occurs faster if the brightness is too high. In practice, most monitors would need to display the same image for several days before burn-in occurred; but if you left

HINTS & TIPS

your machine on accidentally over the weekend, and had this utility permanently installed, you needn't have to think about it.

The more usual use is that of privacy. With the program installed, you can be sure that if you leave the keyboard for a few minutes, no-one passing will see what is on your screen. True, all they have to do is press a key, but in practice very few people will do this, if all they see is a blank screen.

A third use is to remind you when you're daydreaming, if you have a lot of work to get on with. If the screen vanishes, buckle down and carry on!

The program works by the use of events and vectors. When you run the machine code, it installs a routine using the tried and tested method of event number 4, the frame flyback timer which is called 50 times every second. Each time the routine is called, if the screen is normal, a counter is decremented. When the counter reaches zero, the screen is blanked. If the screen is already black, this event routine does nothing.

Keypresses are always routed through the keyboard control vector (KEYV) at &228 and &229. This vector is only called when a key is pressed, so it is intercepted, and the timer is reset to the desired number of fiftieths of a second. If the screen is black, it is turned on again. In normal constant keyboard use, the timer is being constantly reset, so it never reaches zero.

The method used to turn the screen on and off is to program register 8 of the CRTC chip in your BBC micro. There are many methods by which the screen can be made black, but this is certainly the neatest one which works in all screen modes (including mode 7) and also turns the hardware cursor off. Register 8 is a write-only register, so the values required to program it must be known.

Fortunately these are given for each mode in the 'Advanced User Guide'. The register contains information about the cursor and display, but has special 'disable' modes, which are used here. Unlike some methods of programming the CRTC, disabling using Register 8 allows you to maintain the frame synchronisation, so that when the picture is restored, it behaves just like a palette switch, and there is no 'frame roll'.

The values required are &01 (&93 for mode 7) for normal display, and the &Fo

(&FF for mode 7) to disable display. Note that the values for interface mode given in the Advanced User Guide are correct (&03) in the CRTC chapter, but wrong (&01) in the mode 7 screen table.

There are some drawbacks to the program. Firstly it will not restore the screen if you press CTRL, Shift, CAPS LOCK and Shift LOCK alone, as these keypresses are not vectored. Secondly, although the program does not restore the screen when a character is output, it does so when the cursor is forced on to a new line, because when this happens, the operating system makes a test (vectored through KEYV) to see if CTRL and Shift are being held down, so that it can halt output if they are.

£5

ONE-LINE LABEL SEARCH

Inspired by the one-line function and procedure finder from Nicholas Sayers in November's Hints and Tips, Phil Bender from Sunderland offers a one-line program for finding assembler labels in a Basic source program. The program simply LISTs each line which starts with a label.

Phil's program will find labels at the beginning of a line, and print them out up to the end of the label, or the end of the line. It works by passing through each line, checking whether the first non-space character in the line is a full stop, and if not, using the line length bytes to jump to the next line. As a result the routine is fast, finding about 35 labels in 6.5k of source in about seven seconds.

Phil points out that the same technique can be applied to Nicholas's program, which should speed it up considerably. To do this, alter Nicholas's MID\$ expression to:

```
M. "FNPROC", 1-2*(M?J=24
2), 2-2*(M?J=242) )
```

and use real variables throughout. A number of readers pointed out that Master and Compact owners have the LIST IFDEF routine built in, to find definitions quickly.

Phil also offers an improvement to Susan Stepney's 1-D Life in the same issue. There is no point in plotting a cell in colour 0, as it is already the background colour, and therefore if the following lines are changed:

```
480 C%=A%?I%
```

```
490 IF C% THEN GCOL 0,C%:P
LOT 69,X%,Y%
```

and similar changes are made to lines 330-360, the program will run faster.

£5

INTERWORD WORDWRAP CONTROL

James Hunt of Denmark Hill in London has been preparing text in *Interword* which includes embedded listings. He found that one problem of including listings in a wordprocessor is that wordwrap can make the listing look odd, as listings tend to have long runs of characters without spaces in the lines.

Interword looks back along the line for the last space character, which could be near the start of the line, or perhaps between the line number and first character. In this latter case, the net effect would be that *Interword* prints the line number on a line of its own, and starts the text of the Basic line on the next screen line below.

James decided to investigate. He discovered that wordwrap can be turned off by setting the least significant bit of byte &48 in the *Interword* file. He then discovered that *Interword* stores the page number of the start of its current file in location &29 in zero page. He wrote a couple of simple programs, WRAPON and WRAPOFF, which locate and alter this byte directly. The net effect is to turn on and off the wordwrap facility.

To use the program, assemble the listings in the yellow pages, and two machine code programs WRAPON and WRAPOFF will be produced. These reside in the relatively safe area of page &9. To prepare a file with wordwrap disabled, such as large tables of figures, make sure that file is loaded and issue the command *WRAPOFF from the front menu. If you change your mind, type *WRAPON. You should type *WRAPOFF again for each new file you create. The change is stored permanently in the file when you save it.

A slight snag is that the effect is global, so when you turn off the wordwrap, any normal text paragraphs will lose the wordwrap effect. To avoid this you can spool the rest of the text out to disc, and reload it into *Interword*. This places carriage returns at the end of each line, so wordwrap is irrelevant.

VIEW»MAC

View»Mac Version 2 – Converts View, InterWord, and Wordwise Plus documents to MacWrite

View»Mac has already established itself as the most effective way of transferring View documents to the Macintosh.

Now View»Mac has been extended to cater for all the main document formats on the BBC Microcomputer and Master 128: View, View Professional (or PipeDream), Wordwise Plus, and InterWord.

Transfer in either direction

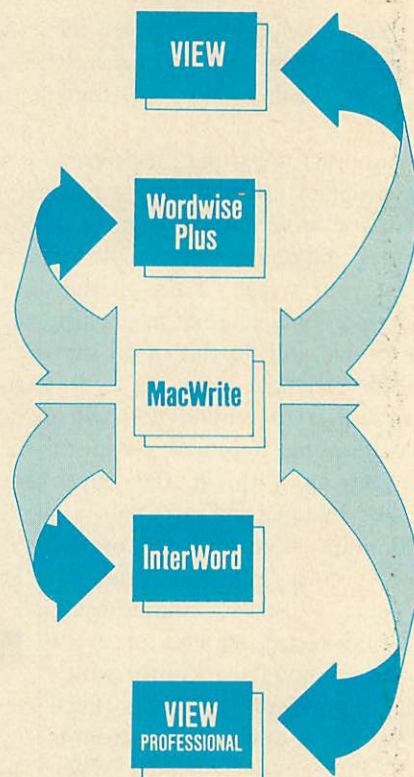
Furthermore, View»Mac can now transfer and convert any document format in either direction: to or from the Macintosh.

Transfer several files at once

Other advantages include faster transfer, and optional transfer of several files, or a complete folder, in a single operation.

View»Mac Version 2 is available for just £59 plus vat (educational price). The serial cable to connect the BBC Microcomputer and Macintosh is available for £25 plus vat.

Existing users of View»Mac can upgrade to Version 2 for £19 plus vat.



BBC BASIC

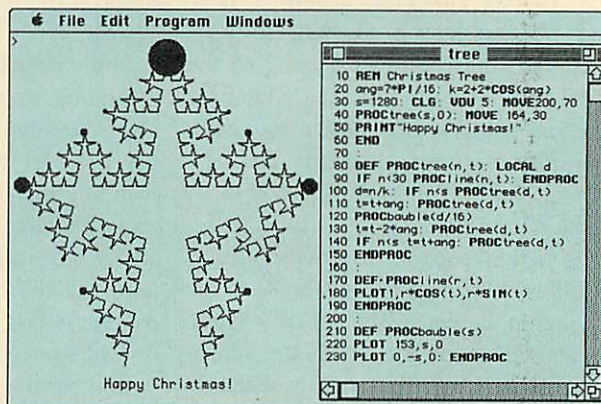
BBC BASIC – Now available for Macintosh

BBC BASIC has become established as the major programming language used and taught in UK schools. Its structuring features, such as named procedures and functions with arguments, make it an ideal language for learning to program.

Now Macintosh owners can program in a version of BBC BASIC designed to behave in exactly the same way as on the BBC Microcomputer and Master 128, and interchange programs directly.

BBC BASIC for the Macintosh includes an integral editor, for the fast entry and editing of programs, and built-in menu commands for transferring programs to and from a BBC Microcomputer.

- ▶ Simulates all the important VDU codes, so that most BASIC programs can be typed in or loaded and will run without modification.
- ▶ Compatible with Macintosh 512KE, Mac Plus, Macintosh SE, and Macintosh II.



- ▶ Includes features from BASIC V on the Archimedes, such as: WHILE...ENDWHILE, CASE, multi-line IF...ENDIF, and the graphics extensions: CIRCLE, ELLIPSE, RECTANGLE.

Price

BBC BASIC for Macintosh is available for £149 plus vat (educational price), with a full User Guide and fourteen example programs.

AU88/6

HUMAN▼COMPUTER
INTERFACE · LIMITED

For more information contact:

Human-Computer Interface Limited
25 City Road, Cambridge, CB1 1DP, England.

Telephone: (0223) 314934 Fax: (0223) 462562

ARC AGORA

SOUND BEGINNINGS

With a focus on music we look at sound generation, coping with disc faults and converting Master font files to the Archimedes

David Acton

I hope you'll forgive the near-domination of this month's Agora by the topic of sound, but I thought it was time this long-neglected subject had some decent coverage.

In fact, contrary to popular fiction, the way Arc sound works is very simple – there's no messing about with ENVELOPES and the like. Sounds are only generated from digital data – rather like that on hi-fi compact discs, but of a lower quality. The peaks and troughs of the sound wave are represented as high and low numbers, and they are passed directly – in a stream – to the sound-generating hardware.

It is VIDC, the video chip, that actually plays back digitised sound. It does so by DMA or Direct Memory Access, in the same way as it sends a stream of video data to the monitor. You don't need to do anything once a sound is playing: your only job is to supply the next batch of sound data when asked by the Operating System.

In future columns, I hope to tackle the problem of sound scheduling and making music. But this month, I'm concentrating on sound generation and the building of a so-called 'level one handler'.

There are two ways of acquiring the data necessary to make a sound: you can digitise it using a sound sampler such as the A440 from Armadillo Systems or you can synthesise it using a little maths. There isn't the space to provide a proper digitised sound, so you must cheat and synthesise one. Listing 1 generates a sound datafile – called Raw – similar to one the A440 Sampler might produce. Make sure you have plenty of free disc space before you start – quite a few large files are going to be loaded and saved this month!

Those of you with A440 Samplers might like to *DUMP a saved sample



file. You will see &18 bytes of information at the start and then the sound data itself. The 'zero' of the data is &80 and so if you record near silence, the values in your file will just hover around the &7F or &80 mark.

Remember that the numbers were not values of 'volume' but rather indications of where the loudspeaker should be at a given time – raw data in the rawest sense. The loudest noise would be one that switched from &00 to &FF, because that would mean the largest movements of the loudspeaker. Listing 1 produces a regular sound wave which steadily diminishes in amplitude. You might like to *DUMP the file Raw once it has been saved.

Such raw data cannot be fed directly to the loudspeaker. Firstly, the 'zero' point must be shifted down to (real) zero. Secondly, the Arc's loudspeaker expects sound data to be in a special logarithmic format. To make things more complicated, the sign-bit (determining whether the loudspeaker is in or out) must also be shifted: from bit 7 to bit 0. To simplify matters, a SWI call is provided to the conversions: "Sound—Soundlog" and listing 2 uses this SWI to convert raw files into a more usable format.

Run listing 2 and enter the Raw filename (or press Return for Raw). You will then be asked if you want to strip off the data at the start. When converting A440 files you should press Y; press N if converting your demonstration file, Raw, as this doesn't have the extra data put on by the Armadillo unit. Listing 2 then modifies the data, moving the zero down as it goes. Then enter the filename for the converted data (press Return to use a filename Demo).

Now you have suitable sound data; you just need a way of playing it back.

The basic procedure is to inform the OS that you have a new voice which may be used. Then you assign a particular channel to your new voice which you then use with SOUND.

To get the OS to recognise your voice you must attach it to a standard header, somewhat similar to a module header, which must be written according to some very strict rules. Once the header is complete, stick the sound data on the end and put the whole caboodle into a module. Listing 3 takes care of all this – make sure you have about 144k of spare RMA space configured before starting.

The actual sound header begins at .voicebase. First comes a series of branches, followed by an offset pointing to the voice name (this is the name shown by *VOICES). Four main routines are referred to in the branches: .instance, .gateon, .gateoff and .fill.

Having told the OS about your voice, should anyone use it to play a note these four routines will be called at various times. First, .instance is called. The function of this routine is to find the address of a logarithmic amplitude table. You'll use this later to scale your sounds according to the required volume.

Next, .gateon is called. This indicates that the time has come for the note to be played and the first lot of sound data must be passed on to VIDC. The .gateon routine points the register 'read' to the start of your sound data and then falls into .fill.

The routine .fill does the work of shuffling sound data, and is called whenever VIDC is ready for more. At the heart of .fill are five instructions – repeated four times to speed buffer-filling. The loop is unrolled so there are fewer branches to slow things down.

You have to make two adjustments to your data before playing it: it must be scaled (according to the volume parameter given in the Sound command that called it) and it must be played at the appropriate pitch. Different pitches are achieved by playing back sounds at different speeds: so-called 'false pitch'. This variation in speed is implemented using a cunning device called a phase accumulator (far too cunning for this column) and this is stored in the register called phaseacc.

Phaseacc is shuffled about and then used as an offset into your sound data. The volume adjustment is simpler than you might think: remember that your

sound data is now logarithmic. The desired volume is supplied to .fill in R1, so you merely convert this to a logarithmic value and subtract it from each byte of sound data. Because it is a logarithm, this has the same effect as dividing down the volume.

Another instruction (MOVMI value, #0) is required to catch any negative amplitudes. The actual storing of the sound data in VIDC's buffer is done in steps according to the parameter dmastep. If only one voice is used, data is stored consecutively (so dmastep contains one); if two are used then the data for the voices are 'interleaved' (dmastep contains two), and so on up to a maximum of eight voices.

So, .fill shuffles bytes from your buffer to VIDC's four at a time until you've filled it up, after which you just need to decrement the centisecond time (the variable time) to see if your note's run its course. If so, .gateoff is called – the .gateoff routine is invoked whenever a note is to be terminated.

Run listing 3 and enter the name of a data file modified by listing 2; press Return for Demo. The sound module will be assembled, including your sound data, and saved as 'AU-' plus the first seven letters of the name of your voice; it could be called 'AU-Demo'. Now, you are ready to play.

Listing 4 searches through the current directory and lists all files beginning with AU-, noting all the sound modules. If there are none you will be told so; if there's just one it will be chosen automatically; if there are several you must enter the number of the one you want to use. Then, a brief but festive tune should be sounded in the voice of your choice. Your demonstration voice should appear as 'AU-Demo'. If you buy the monthly disc there will be a few extra voices to choose from.

This all might seem a lot of trouble to go to just to play a note. But do persevere – digitised or synthesised sound can enhance programs wonderfully if it's done with care.

£20 SLIPPED DISCS

Well, not so much slipped as corrupted. Whenever you encounter a disc fault it is always alarming. If you have two drives you can often rescue the uncorrupted

files by *COPYing them from one to the other; if you have a single drive it can be a nightmare! A solution from Jason O' Broin wins him £20. (Listing 5 on the yellow pages.)

Jason's program copies discs sector-by-sector, using as much memory as possible (to reduce the number of disc-swaps needed). Simply format a blank disc to the same capacity as the corrupted one and Jason's program will copy across any sectors that have remained intact. Of course, some files may be corrupted – you'll have to test these out yourself – but the rest will be safe.

Run listing 5 and specify the size of disc to be copied by pressing 'L' (640k) or 'D' (800k). Press Return and then enter the source and destination drive numbers. Insert the appropriate disc when prompted and write protect the corrupted disc – you don't want any more accidents!

The copying process takes some time, so be patient. The program's progress is shown on the screen together with any disc-faults detected.

£10 BBC FONTS

£10 goes to Richard Averill for our last offering – listing 6 on the yellow pages. His program takes font files produced with Master utility "CharDes" and converts them for use on the Archimedes.

Run listing 6 and enter the name of the 'CharDes' font file. Then enter the name you want the Archimedes font file to be called. After a short while the Arc font will be ready. The file-type of the Arc font is set to &FF7 (or 'BBC Font') which means that you can simply *RUN the font to use it.

RISC OS

RISC OS upgrades for the Archimedes will be available from April 1989, and will cost £29 at first. Upgrading will definitely be worth it. The upgrade consists of four replacement ROMs, two application discs, a supplementary disc plus new manuals.

Send your programs, ideas, hints and tips to Arc Agora, BBC Acorn User, Redwood Publishing, 20-26 Brunswick Place, London N1 6DJ. The reward for items published is nationwide fame plus up to £20.

Watford Electronics

Jessa House, 250 Lower High Street, Watford WD1 2AN, England

Tel: Watford (0923) 37774 Tlx: 8956095 Fax: 01 950 8989

Shop Hours: 9am to 6pm (Mon.-Sat.) Thursdays 9am to 8pm

All prices exclusive of VAT; subject to change without notice & available on request.

Credit Card Orders (ACCESS & VISA) Tel (0923) 33383 or 50234 (24 Hours)



The choice
before and after
the experience

Acorn
The choice
of Experience

Archimedes *micro*

| System | Basic | Mono | Colour |
|--------|-------|-------|--------|
| 305 | £699 | £759 | £909 |
| 310 | £829 | £875 | £1025 |
| 310M | £879 | £925 | £1099 |
| 440 | £2399 | £2449 | £2595 |

(Securicor carr. £10 on Micros)

FREE PRINTER OFFER

With every Archimedes Micro purchased from us this month, we are giving away absolutely **FREE** a **Panasonic KX-P1081** Dot Matrix **PRINTER** and an Archimedes **PRINTER LEAD** worth **£160**. If you already own a printer, then simply phone in for alternatives. ... and with every Archimedes 440, we are also giving away absolutely **FREE** the **Printer AND Acorn's DEVELOPERS' TOOLBOX** together worth **£360**.

| | |
|---|------|
| ● 0.5 Mb RAM for 305 | £149 |
| ● Podule Backplane | £37 |
| ● ROM Podule (Computer Concepts) | £48 |
| ● ROM Podule (C.C.) with Battery Backup | £59 |
| ● ROM Podule (takes five 8 bit ROMs, of 16, 32, 64 or 128K) | £56 |
| ● Archimedes Ref Manual | £29 |
| ● 2nd 800K floppy disc drive (for 305, 310 & 410) | £118 |
| ● Econet Network Board | £40 |
| ● Backplane for 2 podules, with fan (305, 310) | £39 |
| ● New Backplane for 4 podules | £39 |
| ● I/O Podule (with User port, Analogue port & 1MHz bus) | £85 |
| ● MIDI add-on to I/O Podule | £38 |
| ● MIDI Expansion Card | £66 |
| ● Real time Video Digitiser (Watford) | £249 |
| ● Sound Sampler (Armaddillo) | £105 |
| ● 20 Mb Hard Disc & Controller Card | £469 |
| ● ARM Assembly Lang. Prog. Manual | £12 |

WORDPROCESSORS

| | | | |
|---------------------|-----|-----------|-----|
| Wordwise + | £18 | Pipedream | £89 |
| Image Writer | £25 | View | £49 |
| Interword ROM | £35 | Viewspell | £32 |
| 1st Word Plus | £79 | ViewIndex | £12 |
| Archie Spell Master | £49 | | |

DATABASES

| | | | |
|---------------------|-----|-----------|-----|
| AlphaBase | £39 | Viewstore | £49 |
| System's Delta Plus | | | £60 |

SPREADSHEETS

| | | | |
|----------------|-----|------------|-----|
| Intersheet ROM | £35 | Viewsheets | £49 |
| Sigmasheet | | | £59 |

BUSINESS GRAPHICS

| | | | |
|-----------|-----|----------------|-----|
| GammaPlot | £30 | Interchart ROM | £22 |
|-----------|-----|----------------|-----|

INTEGRATED PACKAGES

Logistix - Database, Spreadsheet, Time Management & Business Graphics **£95**

PC EMULATION Pack

(for 310, 410 & 440), including MSDOS 3.21 **£79**

GRAPHICS, ART & DESIGN

| | | | |
|------------------|-----|------------------|-----|
| Interchart | £25 | Gamma Plot | £30 |
| Artisan | £31 | Gamma Plus | £60 |
| Support Disc | £17 | Autosketch | £69 |
| Toolkit (Beebug) | £32 | Toolkit (Clares) | £31 |
| Arc Termulator | £59 | Zarch | £16 |

Now available on DISC Computer Concepts' Software for Archimedes

| | |
|-------------------|-----|
| Inter-Word Disc | £27 |
| Inter-Sheet Disc | £27 |
| Inter-Chart Disc | £17 |
| Spell-Master Disc | £48 |

LANGUAGES

| | |
|-----------------------------------|-----------|
| ANSI 'C'; ISO-PASCAL; FORTRAN 77; | £95 each |
| Cambridge LISP; PROLOG X | £181 each |
| Archimedes Assembler | £189 |
| TWIN EDITOR | £27 |

0% (APR) FINANCE

For a limited period, Watford Electronics are able to offer the Archimedes range of microcomputers at **0% (APR)** finance. Credit facility available subject to status. Please inquire for further details.
(Watford Electronics are Licenced Credit Brokers)

Archimedes to BBC SERIAL LINK

Using this simple data link, it is possible to solve all your BBC to Archimedes data transfer problems. The kit is supplied with a disk, and the necessary cable to connect the two computers. Using this package it is possible to transfer any data from the BBC to Archimedes at upto 19200 baud.
By far the easiest way to transfer data to your new computer.

Only **£25**

Archimedes 5 1/4" / 3 1/2" Disc drive Interface

With this interface it is possible to connect almost any 5 1/4" / 3 1/2" disc drive with its own power supply to the Archimedes. **NO SOLDERING** is involved. Supplied complete with necessary lead.

Only **£19**

Note: This is not simply a lead. Attempting to connect an external disc drive by direct connection may result in damage to your Micro.

New

**By Popular demand we are now
supplying refurbished and fully
guaranteed BBC Micro Model B with
Disc Filing System**

(Please telephone for price & availability)

The 80186 Co-Processor

This package consists of the Master 512 board, Watford Co-Pro Adaptor, 1770 Disc Upgrade and Acorn ADFS. This is a complete package, with its own power supply, ready to interface with your BBC Micro. The Master 512 board using the 80186 16 bit Processor at 10MHz and running Digital Research DOS Plus, gives a high degree of IBM compatibility at an extremely reasonable price. Included in the 512k package is a mouse and the amazing Digital Research GEM suite of software; GEM Paint, GEM draw and GEM desktop giving a complete Mouse Icons environment (All other GEM packages will work on the 512k). Famous packages that will work with the 512k board include Wordstar, Dbase II, Lotus 123 and many others. The only requirement to upgrade any BBC Model B to this system is you must have twin 80 track disc drives.

New low price **£175**

CREDIT TERMS now available.
Please telephone or write in for
further information.

BBC MASTER

MASTER 128K Micro incl. Acorn's:
View, Viewsheets, ADFS, BASIC Editor
& **TERMINAL** plus **£125** worth of
FREE OFFER (see below) **£379**

SPECIAL OFFER

**FREE ... £105 worth of
Hardware & Software**

Gemini's OFFICE MATE & OFFICE MASTER packages on Disc consisting of: Database, Spreadsheet, Beeplot graphics. Accounts packs: Cashbook, Final Accounts, Mailist, Easyledger, Invoice & Statements, Stock Control and Watford's 3 1/2", double sided 1 Megabyte (unformatted) single disc drive complete with cables, ready to connect to the micro - with every BBC Master purchased from us this month.

**BBC MASTER with Turbo Board +
above SPECIAL OFFER** **£513**

512K Processor Add on Board
"inc. Mouse and GEM package" **£95**

**BBC MASTER plus 512K 80186
Co-processor Board (incl. Mouse
and GEM package) plus the above
£105 worth of SPECIAL OFFER**

£449

ADD-ONS & ACCESSORIES

| | |
|--------------------------------------|--------------|
| Turbo 65C102 Add-on Module | £119 |
| Econet Module for the Master | £40 |
| Twin ROM Cartridge for Master | £7.50 |
| Quad ROM Cartridge for Master | £11 |
| Universal Processor Adaptor | £75 |
| Master Reference Manual I | (No VAT) £14 |
| Master Reference Manual II | (No VAT) £14 |
| Master Advance Ref. Manual | (No VAT) £19 |
| 64K Upgrade Kit for B+ | £32 |
| Acorn 1770 DFS Kit complete | £49 |
| ECONET Upgrade Kit for BBC | £42 |
| ALL ECONET UPGRADES Available | |
| ARIES' Professional IEEE Interface | £238 |
| Acorn IEEE Interface Complete | £265 |
| Morley Teletext Adaptor with ATS Rom | £99 |
| Filestore E01S | £899 |
| Filestore E40S | £799 |
| Filestore E60S | £1080 |
| Ecolink | £270 |

BBC MASTER COMPACT

| | | |
|---|--------------------------------------|------|
| System 1 | Standard Package | £299 |
| System 1A | System 1 + TV Modulator | £315 |
| System 2 | System 1 + Green Hires Monitor | £345 |
| System 3 | System 1 + Medium Res Colour Monitor | £469 |
| RS232 Kit for BBC Compact | | £25 |
| Additional 3 1/2" Drive for BBC Compact | | £90 |
| | (Securicor carriage £7) | |

65C102 2nd PROCESSOR

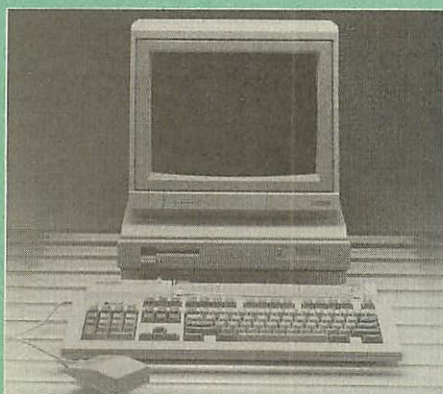
This amazing package consists of the Acorn 65C102 'Turbo' Board, the Watford Co-Pro Adaptor and Acorn 1.2 DNFS ROM. The 'Turbo' board, running at 4MHz with 64k of additional RAM will increase the speed by between 50 and 200% depending on the application running, and allow a BASIC program of upto 44k in any screen mode. Simply by plugging in the Co-Pro and the DNFS ROM with its special Tube host code and you massively increase the power of any Model B. This is a complete package, with its own power supply, ready to interface with your BBC Micro.

£159

Continued

SPECIAL **CHRISTMAS** **OFFER**

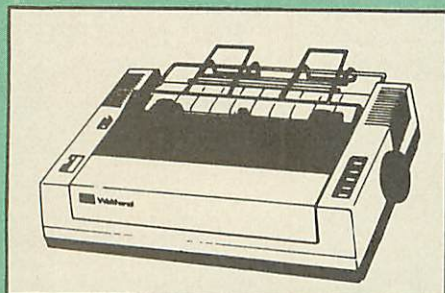
FROM
Watford Electronics



ACORN ARCHIMEDES

The Archimedes range of micros brings new levels of performance in all respects. Acorn's breathtaking technology is breaking new ground with advanced application software for business, design and desktop publishing.

WITH EVERY ACORN ARCHIMEDES PURCHASED
Watford Electronics
WILL GIVE YOU A CHRISTMAS PRESENT OF A
FREE PANASONIC PRINTER



Panasonic KX-P1081

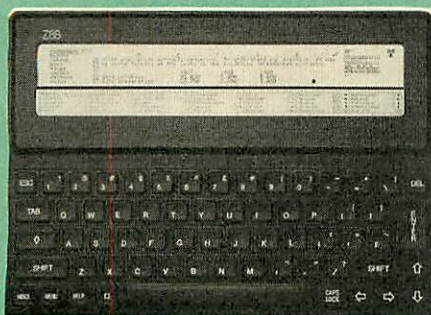
The Panasonic 1081 dot matrix printer handles text printing at speed, features business quality printout and links beautifully with graphics, CAD and DTP software.

With every Archimedes Micro purchased from us this month, we are giving away a free Panasonic KX-P1081 printer and an Archimedes Printer lead worth £160.

With every Archimedes 440 we are giving away the Panasonic KX-P1081 and Acorn's Developer's Toolbox – together worth £360.

For full details of our Archimedes range of micros and prices see page 4 of our advert. 0% finance applies to this offer.

Z88 Sinclair's Portable Micro



The worlds first, truly portable Micro. It is A4 size, only an inch thick and weighs under 2lbs. Ideal for use when travelling or as a personal organiser.

Only: **£239**

FREE

With every Z88 purchased from us this month, we are giving away absolutely FREE, a Z88 to BBC Interface Link, 4 rechargeable batteries and a compact Mains Battery Charger worth £38.

ACCESSORIES

| | |
|---|--------|
| Mains Adaptor | £8.65 |
| 32K RAM Pack or 32K EPROM Pack | £17.35 |
| 128K RAM Pack or 128K EPROM Pack | £43.40 |
| 512K RAM Pack | £169 |
| Z88 Spellmaster for Pipedream | £51 |
| Z88 to BBC Link | £21.70 |
| Z88 to PC Link II | £30 |
| Z88 EPROM ERASER | £34.75 |
| Serial Printer Cable | £8.65 |
| Parallel Printer Cable | £24.00 |
| Z88 Modem | £145 |
| Z88 Soft Carrying Case | £8.50 |
| Sinclair Z88 Computing Book | £9.95 |
| AA Nicad Rechargeable Battery | £1.50 |
| Battery Charger, Compact & Fast (3 Hours) | £6 |

Z88 XMAS PACKAGE OFFER

This special offer package consists of: A Z88 Micro, 128K Ram pack, Mains Adaptor, Carrying Case & a Set of Kodak batteries.

Only **£289**

CO-PRO Adaptor



With this Watford's Co-pro Adaptor unit, you can now attach any BBC Master coprocessors to your original BBC B. Use the super fast Turbo Board with your BBC B, it is much faster than the 6502 2nd processor superseding it.

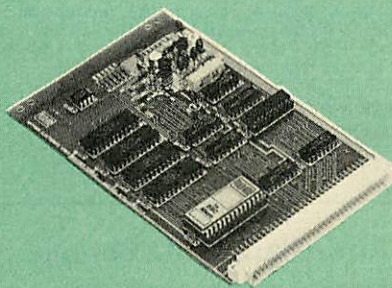
With the 512K add-on your standard BBC machine achieves IBM PC compatibility at a realistic price running GEM, Lotus 123 and many other programs. Included with the 512k package is a high precision mouse and the Digital Research GEM suite of software; GEM Desktop, GEM Write GEM Paint. This requires both the 1770 DFS and the ADFS to be fitted to your computer.

To use other co-processors you require a BBC B with DNFS 1.20 or higher, or BBC B+ fitted with 1770 DFS 2.20 or greater. Co-processors work exactly like a second processor. Master owners may use Co-Pro to add a second Co-processor externally.

Watford, brings power to your BBC at only:

£35 (carr £5)

Archimedes Real-Time Digitiser



Watfords' Archimedes Video Digitiser is the most sophisticated digitiser ever designed for a micro. It provides a fast and flexible means of capturing images from a video camera or recorder for display and manipulation on the Archimedes range of Micros. Off-air television signals may also be digitised via a video recorder or TV tuner.

Once captured, Video images can be stretched, squashed, rotated, stored on disk, printed, or used by applications software.

Applications include desktop publishing, graphics, animation, image analysis and recognition, medical imaging, automatic inspection and measurement, databases, interactive video, remote transmission of pictures via a modem, movement detection ... or anything else you can think of!

SPECIFICATION

SOFTWARE

All the driver software for the digitiser is contained in a ROM on the podule. Facilities provided include:

- Grabbing of images to the screen or dumping to memory.
- Continuous grabbing and display for previewing or camera alignment.
- 'Hot key' grabbing - pressing a (configurable) key combination grabs and displays an image on the screen while another program (e.g. paint software such as Artisan) is running.
- Scaling (zoom/shrink) any section of an image to any size in X and Y directions, with optional X/Y flip, window clip and logical (AND/OR/XOR) plotting.
- Rotation and scaling to any angle and size, rotating about any point, with optional window clip, and logical (AND/OR/XOR) plotting.
- Very versatile matrix printer screendump facility for Epson FX, LQ and EX compatible printers - pictures can be printed to ANY size (including multiple sheets) at any orientation, using any available printer density and one of six internal sets of dot patterns, or with user definable patterns (pattern editor supplied). The screen-dump can also be used for general purpose graphics screen printing.
- Pixel value lookup tables: pixel values can be passed through a user defined lookup table to allow contrast enhancement, thresholding pseudo-colouring etc.
- Smoothing and noise spot removal to enhance image quality.
- Creation of sprites from all or part of a digitised image.
- Saving and loading of digitised images in compressed format.
- Combination of pictures by adding, averaging, subtracting, multiplication etc.
- Much faster versions of the Arthur *ScreenLoad and *ScreenSave commands.

Software facilities are accessed via operating system star (*) commands and SWI calls. High resolution screen modes using MultiSync type monitors are supported.

UTILITY DISK

A disk is included, containing sample pictures, examples and utility programs including the following:

- Colour image grabbing using colour filters with monochrome or colour cameras, including colour balance adjustment and scaling facilities.
- Pattern editor for 2 colour display modes and printer screen-dumps.
- 512 line interlaced display for non MultiSync monitors.
- Thresholding to create two colour images.
- Capture and replay of animated sequences.
- Several example programs illustrating the use of digitiser software.

RESOLUTION

Images are digitised to 512 (h) x 256 (v) pixels, and then scaled to fit the Archimedes' screen. It is possible to digitise to 512 x 512 pixels if the picture is stationary for about 0.1 second. 512 x 512 images can either be displayed on a MultiSync monitor, or on a normal monitor using interlacing.

Pictures are digitised to 64 levels of grey (6 bits). Note, however, that it is only possible to display all 64 levels on a monochrome monitor, or a colour monitor which has a composite (CVBS) input. For this reason, the Philips CM8533 monitor is recommended instead of the standard Archimedes monitor. It is also possible to connect both a colour and a monochrome monitor at the same time.

Any 2, 16 or 256 colour graphics mode can be used to display digitised pictures. In two colour modes, grey levels are represented using dot patterns, which may be redefined if required (a pattern editor is supplied).

SPEED

Video fields are captured in real time (1/50th sec.), and then transferred to Archimedes' memory or the screen. The grab/display rate is dependant on the screen mode and picture size, up to 25 fields per second for quarter screen images, or 12.5 per second for fullscreen (Mode 9).

HARDWARE

The digitiser is a single width podule, with a BNC socket on the rear panel for the video input, which may optionally be terminated via a link. There is 128K of on-board memory to store the digitised image, and a 32K ROM on the podule contains all the driver software.

Automatic video level control and black level clamping circuitry is used to ensure that the optimum contrast is obtained from a variety of video sources. A filter is included to avoid patterning effects when using colour sources.

Price £249

Watford Dealers' List

UNITED KINGDOM

Alpha Microtec Ltd, 321 Stratford Road, Shirley, Solihull, West Midlands. Tel: 021-745 8998.

Badger Micros (Devon), Badger's Hill, Southerton, Ottery-St. Mary, Devon EX11 1SE. Tel: 0395 68516.

Beebug Retail, Dolphin Place, Holywell Hill, St. Albans.

Cambridge Computer Store, 4 Emmanuel St., Cambridge CB1 1NE. Tel: 0223 358264.

Circuit Distribution Ltd, Park Lane, Broxbourne, Herts.

HCCS, 575-583 Durham Road, Low Fell, Gateshead, Nr. Newcastle Upon Tyne. Tel: 091 4870760.

Mancomp Ltd, Printworks Lane, Levenshulme, Manchester. Tel: 061-224 1888-9888.

Microman Computers, Pasture Lane Farm, Pasture Lane, Rainford, St. Helens, Merseyside WA11 8PU. Tel: 074488 3667.

The Computer Depot, 205 Buchanan Street, Glasgow G1 2JZ. Tel: 041-332 3944.

Versospeed Ltd, Boyatt Wood, Eastleigh, Hants.

OVERSEAS DEALERS

*Absolute Electronics, Rewal House, 208-210 La Trobe Street, Melbourne, 3000, Victoria, Australia. Tel: (03) 663 2411.

Computer Distribution Company, Parklaan, 47, 8-9300 Aaist, Belgium.

E.B.N., Elisenstrasse 13, 1000 Berlin 41. Tel: (030) 7952057.

Lendac Data Systems, Unit 31, IDA Enterprise Centre, Pearce Street, Dublin 12. Tel: 710796.

Lindis International Ltd, Wood Farm, Linstead Magna, Halesworth, Suffolk. Tel: 098 685 476.

Scientec P.V.B.A., Zilvermidstraat 2, B-2000 Antwerpen, Belgium. Tel: 03 233 59 06.

Techno-matic Data, Holbergsgade 19, 1057 København K, Denmark.

*Velobyte, Scheaedyksdyk 5a-6a, 3011 EB Rotterdam, Holland. Tel: (010) 413 8197/414 5171.

Viking Tecno, Vestergade 12.1, 9620 Aalestrup, Denmark. Tel: 08 642522.

*Acorn/Watford Referral Centres.

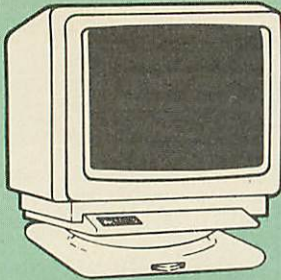
Watford Electronics are Appointed & Authorised DEALERS / REPAIR CENTRE for Acorn Computers Ltd Microvitec Monitors Panasonic Printers

Continued

MONITORS

&

SWIVEL BASES



All Monitors are supplied complete with BBC connecting leads FREE.

MICROVITEC 14"

- 1431 - Standard resolution as used on the BBC television computer programme £175
- 1451 - Medium resolution, suitable for word processing in mode 0 £219
- 1441 - High res, exceeds the capabilities of the BBC micro £359
- 1431AP RGB + PAL and AUDIO £199
- 1451AP RGB + PAL and AUDIO £255
- 2030 CS 20" Med Res £380
- 2040 CS 20" Hi Res £675
- Dust Cover for Microvitecs £5.50
- Touchtec 501 Touch Screen £239

TAXAN 12" & 14"

- TAXAN Super Vision 2 Type 620 Hi-res RGB Colour monitor. Ideal for Wordprocessing £263
- TAXAN 14" Multisync 770 Plus - An autoscanning Ultra high res, colour monitor. Ideal for Archimedes, IBM & Compatibles £449

NEW

EIZO 14" Flexscan 80605 £449

(For full details read the review in this issue of The Micro User).

- NEC JC-1402P 14" Multisync II Ultra Hi-res Intelligent Colour monitor. Auto scans frequencies between 15KHz to 35KHz. Text switch provides 7 colours for Database & wordprocessor. £459

PHILLIPS

- BM7502 12" Hi-res Green Monitor £65
- CM8833 14" Med. Res Colour Monitor £219

STAR BUY

- PHILLIPS 14" Medium Res, dark glass, attractively finished Colour Monitor - supplied complete with RGB, SKART and Audio/Phono Inputs. A push-button switch toggles between Hi-Res monochrome green text mode and full colour display. Has Composite Video Input. (Please state the type of Connecting Lead you require).

ONLY £195

Dust Cover for Phillips Monitors £6

SPECIAL OFFER AMBER MONITOR

BT MERLIN/Acorn 12" Hi resolution Amber monitor. Ideal for wordprocessing. Consoled front panel mounted controls. Illuminated mains on/off rocker switch. Supplied complete with BBC Cable.

Only £49

(Offer valid while stocks last)

N.B. carriage on Monitors £7 (securicor)

A range of IBM PC Compatible monitors, both monochrome & Colour are now available. Please write in for our descriptive PC brochure.

SPARE LEADS

- BNC Lead for Zenith or Philips £3
- Skart Monitor Lead £5
- RGB lead for TAXAN Monitors £3
- Archimedes Colour Monitor Lead £7.50

By placing your monitor on one of our professional swivel bases (see monitors drawing on the left), you gain the freedom to adjust the monitor viewing angle to suit your needs and thus alleviate eye strain and reduce back stress. The front mounted adjustable control dial makes adjusting the monitor viewing angle very simple.

for 12" Monitors £7 (carr. £2.50)

for 14" Monitors £10 (carr. £2.50)

Anti-Glare VDU Screen

These extremely effective, easy to install, 12" & 14" VDU screens eliminate harmful glare, improves contrast on colour monitors. Increases productivity in offices. A must for all wordprocessor users. Hundreds of these screens are in daily use in various branches of one of the leading High Street banks.

£12

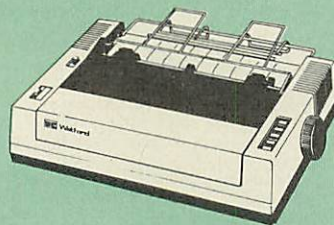
TAXAN KP-815 PRINTER

80 column, Bi-directional, 160 CPS, (NLQ 24cps); Friction & tractor feed + paper roll holder as standard; Epson FX compatible.

Offer Price £155

- Taxan KP915 132 Column Printerr £275 (carr £7)
- RS232 Interface £49
- RS232 Interface with 2K Buffer £69
- RS232 Interface with 16K Buffer £89

Panasonic KX-P1081



Attractively finished in BBC beige. Bi-directional, logic seeking. Has IBM and Epson RX compatible command calls. Speed: 120CPS draft mode, 24 CPS NLQ mode. Character width range from 5 cpi to 17 cpi. Up to 40 downloadable characters. Functions include, Proportional spacing, Justification, centering and left & right ranging.

(Price includes, FREE a 4ft Printer Lead, and a Dump Out 3, Screen Dump ROM worth £35 with every printer purchased from us).

Special Price: **£145** (carr. £6)

Optional RS232 Interface: **£39**

Panasonic KX-P3131 Daisy-Wheel Printer

Low-cost, high performance; Bi-directional, Logic seeking, Proportional spacing, 10, 12 & 15 CPI, Speed 17CPS. 6K Buffer.

Only £255 (carr. £7)

- Tractor Feed £90
- Daisy Wheel (various) £12
- Ribbons: Standard £4.50; Long Life £7
- Extra 32K Printer Buffer (internally fitted) £13

RS-232 GENDER CHANGERS

- Male to Female £4.95
- Female to Male £4.95
- Male to Female £4.95

Panasonic KX-P4450 LASER PRINTER

Latest technology at affordable price. Prints 11 pages a minute, Two A4 size paper bins, Serial & Parallel ports, 512K Buffer - expandable to 1.5Meg, 15 Character LCD Display, Diablo 630, Epson FX-286, IBM Proprinter, HP Laserjet emulations, 5K pages per month duty cycle.

ONLY £1,625

Toner for KX-P4450 £29

NEC P2200 PINWRITER

24 pin; 80 column; 168CPS - 56CPS LQ; Epson LQ compatible, 7K Buffer; 7 resident FONTS, Friction & Tractor feed, front load single sheet feed, etc.

Price: £269

- FREE Price includes a Free BBC Cable.
- Cut Sheet Feeder £59
- Pinwriter Serial Interface £55
- Additional Font Cartridge £25
- NEC P2200 Pinwriter Ribbon £6

NEC PINWRITER P6/P7 Plus

The Ultimate matrix Printer for Business.

24pin printhead; Print speed, 265cps Draft, 90cps LQ; Inbuilt Tractor & Friction feed; A paper park & low tear facility; 20 inbuilt FONTS; A font cartridge facility; 8K of printer buffer; colour option available.

- P6 Plus 80 columns £439
- P7 Plus 136 columns £575
- Cut Sheet Feeder £125
- Colour Option £74
- Serial Interface £73

EPSON PRINTERS

- | | | | |
|--------------|-------|--------|------|
| EX800 | £405 | LQ850 | £430 |
| EX1000 | £545 | LQ1050 | £589 |
| FX850 | £315 | LQ2550 | £839 |
| FX1000 | £425 | LX800 | £175 |
| GQ3500 Laser | £1249 | SQ2500 | £975 |
| LQ500 | £285 | | |

- Star LC10 £175 LC10 Colour £225

PLOTTERS

- Hitachi 672 Colour Plotter £475
- Plotmate Plotter A4S £379
- Plotmate Plotter A3M £549

CUT SHEET FEEDERS for

EX800 £149; EX1000/LQ2550 £210; FX800 £149; FX1000 £179; LQ/LX800 £139; LQ500 £75; LQ850 £135; LQ1050 £175.

TRACTOR FEED for

EX800/1000 £85; LQ800 £44; LQ850 £69; LQ1050 £85; LQ2500 £195

ACCESSORIES

- EX800/1000 Colour Option £55
- EX800/1000 Colour Ribbon £18
- LQ2500 Colour Option £65

(Securicor Carriage on Printers £7)

EPSON PRINTER INTERFACES

- | | | | |
|--|-----|-------------------|-----|
| All these interfaces fit inside the printer. | | | |
| RS232 | £32 | RS232 + 2K Buffer | £52 |
| IEEE 488 | £40 | RS232 + 8K Buffer | £79 |

Universal Printer Sharers/Changers

Connect upto 5 Micros to 1 printer or 5 Printers to 1 Micro with our combined, Sharer/Changer. These Units are made to a very high standard. For extreme reliability, they all have Printed Circuit Boards mounted inside the case, (not a Spagetti Junction of wires). Internal connection is made via high quality ribbon cables. (Ideal for School environments.)

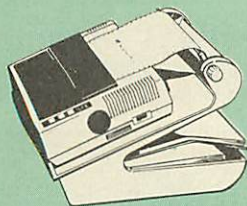
- | Connects | Serial | Centronics |
|----------|--------|------------|
| 2 to 1 | £22 | £23 |
| 3 to 1 | £30 | £32 |
| 5 to 1 | £40 | £42 |

(Cables extra at £6 each. Please specify type required when ordering)

INTEGREX COLOUR JET PRINTER

| | |
|--------------------------------|------|
| ● Colour Jet 132 Printer | £515 |
| ● Paper Roll | £6 |
| ● Screen Dump Software | £10 |
| ● Colour Cartridge | £14 |
| ● Black Cartridge | £8 |
| ● 100 A4 OHP transparencies | £55 |
| ● 8K Serial Interface Optional | £99 |

Professional Printer Stand



This new professional printer stand takes hardly more space than your printer. Due to the positioning of the paper feed and re-fold compartments i.e. one above the other, the desk space required for your printer functions is effectively halved. Additional facilities include: Easy access to paper from both sides, used with both top and bottom feed paper and with its dial controlled paper feed system with adjustable deflector plates it ensures smooth paper flow and automatic refolding.

80 Column version £23 (carr. £2.50)
132 Column version £26 (carr. £2.50)

PRINTER LEADS

| | |
|------------------------------------|--------|
| BBC Centronics 4' long | £5 |
| BBC Centronics 6' extra long | £7 |
| Compact's Special Centronics Lead | £7 |
| Archimedes Printer Lead 1 meter | £7 |
| IBM Parallel Lead 1 meter | £7 |
| Double Ended 36 way Centronic Lead | £9 |
| RS232 Leads (Various) | P.O.A. |

PRINTER RIBBONS & VARIOUS DUST COVERS

| Type | Ribbons | Dust Covers |
|--|---------|-------------|
| BBC Micro | — | £3.50 |
| BBC Master | — | £4.00 |
| Archimedes Micro pair | — | £9.00 |
| IBM PCs pair | — | £6.00 |
| Brother HR15/20 | £3.00 | £5.00 |
| DMP2000 | £3.75 | £4.75 |
| EX/LQ800 | £4.50 | £4.50 |
| EX/LQ1000 | £7.50 | £5.00 |
| RX/FX80/85/800/MX80 | £3.90 | £4.95 |
| RX/FX100/1000 | £5.75 | — |
| Kaga/Taxan KP810/815 | £4.90 | £4.00 |
| LC10 (Black) | £4.25 | £5.00 |
| LQ500/800 | £3.75 | £5.00 |
| LQ1050/LQ2500 | £8.50 | £5.50 |
| LX80/86/800 | £3.80 | £4.50 |
| M1009/GLP | £3.80 | £3.75 |
| Panasonic KX1080/81 | £4.00 | £4.75 |
| SQ2500 | £23.00 | £5.50 |
| Star NL10 | £3.75 | £4.50 |
| Olivetti Ink Jet Cartridges (set of 4) | £9 | — |

Our attractive Dust Covers are manufactured from translucent PVC. The seams are stitched and edges are taped to prevent splitting due to continuous use.

Listing Paper (Perforated)

| | |
|--|-----|
| ● 1,000 Sheets 9½" x 11" Fanfold Paper | £7 |
| ● 2,000 Sheets 9½" x 11" Fanfold Paper | £12 |
| ● 1000 Sheets 9½" x 11" NCR 2 Part Fanfold | £19 |
| ● 1,000 Sheets 15" x 11" Fanfold Paper | £9 |
| ● 1000 Sheets true A4 Fanfold Paper | £11 |
| ● 2000 Sheets true A4 Fanfold Paper | £19 |
| ● Teleprinter Roll (Econo paper) | £4 |

(All our Fanfold paper is Micro perforated leaving a smooth clean edge when the tractor feed strips are detached.)

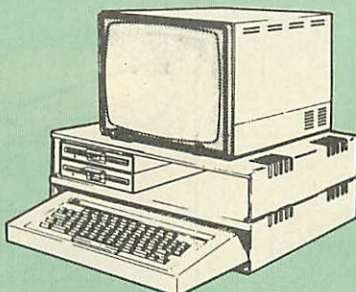
Carriage 1K Sheets £2.50. 2K Sheets £3.00

PRINTER LABELS

(On continuous fanfold backing sheet)

| | |
|------------------------------|-------|
| 1,000 90 x 36mm (Single Row) | £5.00 |
| 1,000 90 x 36mm (Twin Row) | £4.90 |
| 1,000 90 x 49mm (Twin Row) | £7.50 |
| 1,000 102 x 36mm (Twin Row) | £6.25 |
| Carriage on 1,000 Labels | £1.00 |

PLINTHS FOR BBC MICRO, MASTER & PRINTERS

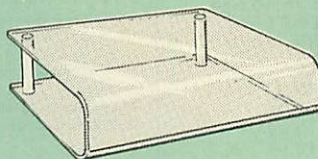


Protect your computer from the heat of your VDU. Our micro plinths have slots for maximum ventilation. The single plinth is suitable for a BBC and VDU, whilst the double height version provides enough room for our stacked disc drive and other peripherals like, Eprom programmer, music unit or simply discs & stationary. The computer slides neatly in the lower section allowing easy access to remove the lid.

The single printer stand is equally sturdy but instead of cooling slots it has elegant cutouts on the sides. This allows easy access to paper from all sides. Colour: BBC Beige.

| | |
|----------------------|----------------|
| Single BBC Plinth | £12 (carr. £2) |
| Double BBC Plinth | £20 (carr. £3) |
| Printer Plinth | £12 (carr. £2) |
| Single Master Plinth | £13 (carr. £2) |
| Double Master Plinth | £24 (carr. £3) |

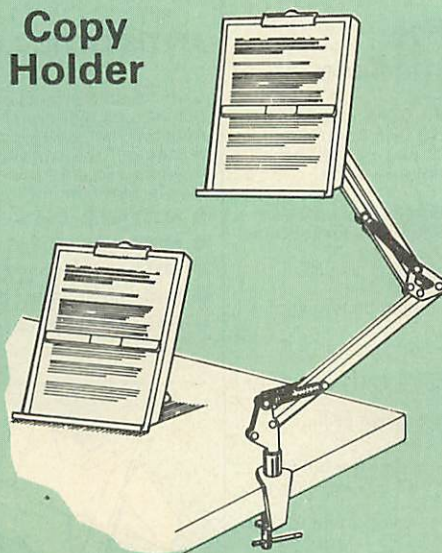
Perspex Printer Stand



Give your Computer System a touch of Class with our elegant, smoke finished Perspex Printer stand. The printer sits on top and the fanfold paper rests neatly underneath, thus occupying the same space as the printer footprint.

Only: £16 (carr. £3)

Copy Holder



Whether you want to type in your latest program or the draft of a new trilogy, Watford's manuscript holders are superb for holding your paper at the ideal height and angle to allow you to read and type in ease and comfort.

Available in 2 full A4 versions, desk resting and shelf clamping. Paper is held firmly by means of a plastic retaining ruler and a clip grip. (for resting books or magazines, the desk top version is recommended).

Desk Top £10 (carr. £2)
Angle poise £14 (carr. £3)

MEGABUFFER 256



The Smallest 256K Printer Buffer Unit in the world 38mm x 130mm x 134mm.

This new Megabuffer 256 from Watford is a full featured 256K Printer Buffer. It allows the computer to print 256,000 character in a short time thus freeing the computer very quickly. In short it makes light work of printing large documents, screen dumps, etc. It is extremely simple to connect. The features are:

- Improves efficiency by making more efficient use of computer and printer.
- Compatible with any computer and printer that uses Centronics Parallel connections including all BBCs, IBM PCs, etc.
- Total compatibility with all software.
- Cheaper phone bills when using your Modems.
- Ideal for those doing large graphics screen dumps that are slow to print.
- Multi-Copy facility allows you to print several copies via Megabuffer without going through your computer.
- Data Dump facility is included.
- Built in test unit for both the buffer & your printer.

In conclusion it can safely be said that MEGABUFFER 256 is the ultimate printer Buffer for both the amateur and professional user.

Only £149 (carr £2)

OKIMATE COLOUR PRINTER

The first ribbon transfer printer in its price range which offers fully versatile colour or black printing. A 24 element print head produces more than 100 shades with exceptional clarity. Ideal for use with Quest Paint or AMX Super Art.

Only: £119

| | |
|-----------------|-----|
| BBC Screen Dump | £10 |
| Colour Ribbon | £6 |
| Black Ribbon | £6 |

THE EPSON RX-FX-KAGA PRINTER COMMANDS REVEALED

So you bought yourself a new printer, because the salesman in the shop showed you how clever it is and impressed you with all sorts of printouts to show its capabilities – he may even have offered you a special price.

However, now that you have got it home and connected it to your BBC microcomputer, you are wondering how to make it perform these magical tasks. The manual seems to give no clues, and when you type in the example programs, the computer throws the LPRINT statements back in your face.

Now what do you do, when this £400 piece of high technology refuses even to move its head, and you have stayed up until 2 in the morning with copious supplies of coffee, desperately trying to print something out. Once again, Watford Electronics comes to your help with our new book entitled 'THE EPSON RX-FX-KAGA PRINTER COMMANDS REVEALED'.

This book describes in plain, easy to understand English, how to use and make the most of your KP810, PW1080A or any other Epson FX80 compatible Printers like Panasonic KX-P1080/1, etc., with the BBC Micro, both from BASIC and Wordwise.

It describes in detail how to obtain the maximum in graphics capability from your printer and includes full indexes allowing you to cross index the numerous commands. Every command is explained in detail, with an accompanying BBC Basic program and an example of its use from Wordwise.

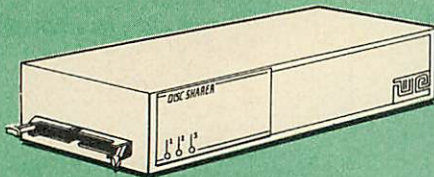
£5.95 (No VAT)



CREDIT CARD 24 HOUR
Ansaphone Hot Lines
(0923) 50234 or 33383

Continued

DISC DRIVE SHARER



(Ideal for educational establishments)

At last, a low cost alternative to the Econet system. Watford's Intelligent Disc Drive Sharer allows you to connect 3 BBC micros (model B, B+ and Master series) to a single or double disc drive. Running under any DFS or DDFS, this intelligent unit will automatically queue the computers. Each computer has a status light dedicated to it. If it is green you will get immediate access to the disk, and red means that you are next in line. The unit plugs directly into the disc drive socket on each computer and is powered by the mains. (N.B. Not for use with ADFS.)

Launch Price: **£65**

Price includes 3 Cables

NOW WITH EXTRA FEATURES AT NO EXTRA COST – Watford's latest DFS 1.44

- Incorporates Acorn's Official Tube Host Code so that those with 2nd processors no longer need to waste a ROM socket on the DNFS.
- Option to DOUBLE the speed of BPUT and BGET.

WATFORD's & ACORN's SINGLE DENSITY DFS

Watford's popular and widely acclaimed DFS has now been available for six years and has gained a large following amongst serious and educational users of the BBC Micro. Owners of Acorn or any other standard DFS can upgrade to our "Ultimate" DFS merely by replacing their DFS ROM. See below for this upgrade. (P.S. Watford's highly sophisticated DFS is fully compatible with Acorn standard DFS). (while Acorn's 1770 DFS is fully compatible with Watford's Mk II DDFS)

- Complete Disc Interface Kit including DFS ROM and fitting instructions **£48**
 - Acorn's 0.90 DFS Kit complete **£49**
 - DFS Manual (Comprehensive) (no VAT) **£6.95**
- (P.S. Our DFS manual is the only comprehensive Manual available for the BBC micro and covers both Acorn & Watford DFSs).
- Watford's sophisticated DFS ROM only **£16**
 - We will exchange your existing DFS ROM for Watford's Ultimate DFS ROM for only **£12**
 - DNFS ROM only **£17** ● ADFS ROM only **£25**

Special 40/80 Disc Drive/DDFS Mk II Offer



- The popular 40/80 track 400K single Disc Drive, Double Sided, cased with Cables. Plugs directly to your Micro.
- Watford's extremely popular DDFS Disc Interface (allows 720K storage). Will run in both, Single & Double Density modes.
- A comprehensive User Friendly Manual.

A Bargain at Only **£125** (£6 carr)
(Offer valid while stocks last)

3 1/2" DISC DRIVE OFFER



These top quality 3 1/2" Double sided, 80 track, 1 Megabyte (unformatted each Disc Drives), are attractively finished in BBC beige. They are supplied complete with all cables and a Utilities Disc. They run directly from the BBC B/Master's own PSU.

- CLS35 400K Unit **£69**
- CLD35 800K Unit **£126**

Mysteries of Disc Drives & DFS Revealed

Are you tired of faulty cassettes, and lengthy loading times? Do you want to upgrade your BBC micro to take discs but you get tied up in the plethora of jargon surrounding the choice and use of these systems.

Then The Mysteries of Disc Drives and DFS Revealed is the book for you. It explains in detail the different types of systems available, how they are installed and how to use them. Many examples are given including pre-written programs to call various functions of the DFS available only through Operating System calls. Different types of disc, 40/80 tracks etc. are all explained. This book is ideal for the beginner confused by the plethora of choice available in the marketplace.

£5.95 (Book No VAT)

DISC ALBUMS

Attractively finished in black leather look vinyl. Stores upto 20 Discs. Each disc can be seen through the clear view pocket.

£4

FLOPPY HEAD CLEANER KIT

The heads in floppy drives are precision made and very sensitive to dirt. The use of a cleaner Kit is a sensible precaution against losing valuable data. It is recommended to clean the drive head once a week. It is very simple to use. Available in 3 1/2" & 5 1/4", please specify.

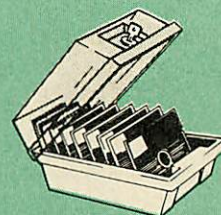
£4

ANTISTATIC LOCKABLE DISC STORAGE UNITS

Gives double protection – Strong plastic case that affords real protection to your discs. Antistatic helps avoid data corruption whilst in storage. The smoked top locks down. Dividers and adhesive title strips are supplied for efficient filing of discs.

- M35 – holds upto 50 5 1/4" discs **£5.00**
- M85 – holds upto 95 5 1/4" discs **£8.00**
- M25* – holds upto 25 3 1/2" Discs **£5.50**
- M50 – holds 50 3 1/2" Discs **£7.50**
- M10 – holds upto 10 Data Cartridges **£15**

* Not lockable



PLASTIC LIBRARY CASES

Holds up to 10 5 1/4" Discs. Only **£2.00**



DISC PLONKER RACK

When using ones micro, there is a tendency to have more than one Disc on the desk. This exposes them to the hazards of fingerprints, scratches, dust, coffee and an untidy desk.

Why not protect your valuable data from all these hazards with the help of our extremely handy and low cost DISC PLONKER RACK. It holds up to eight 5 1/4" Discs.

Protection at Only: **£2**



NEW Watford's MkII 1770 Double Density DFS Interface

Many of our customers have wanted to use our superior DDFS and Acorn ADFS together. Now our Mk II DDFS Board with its 1770 Disc Controller, has been adapted to allow the use of Acorn ADFS as well. It also has all the commands of the Acorn's 1770 DFS, plus the added features:

Added features include:

- Acorn ADFS compatible – Use ADFS on our DDFS board.
- Tube host Code – No longer any need to have the DNFS in your machine to use Co-Processors, even the CoPro and Master 512.
- Auto 40-80 Track sensing – no need to fuss with 40/80 track switches (even works with protected disks).
- An extremely powerful 8271 emulation – ensuring compatibility with almost all software.
- New low profile – small footprint board.
- Fits with all third party ROM boards.
- Option to double the speed of file handling operations – BPUT and BGET.
- Operates in both single and double density modes.
- OSGBPB has been recoded, increasing still further the speed of file handling.

Please note that not all DDFS's are capable of providing either the full 80% storage increase or of allowing a file the full size of the disk – Ours allows both of these!

If you already have a DDFS (any manufacturer), and wish to upgrade to our MkII version, then simply return your existing ROM and DDFS board and we will supply the new DDFS for only **£30.00**.

- Special introductory offer **£39.00**
- DDFS Manual (No VAT) **£6.95**
- We will exchange your existing DFS Kit for our sophisticated DDFS for only **£25.00**

Please note, as the MkII DDFS is a hardware and software upgrade, it is not possible for existing Watford DDFS users to simply exchange their ROM for the new version.

DUST COVERS (For our Disc Drives)

- Single CLS (without PSU) **£3.20** Twin CLD (without PSU) **£3.85**
- Single CS (with PSU) **£3.95** Twin CD (with PSU) **£3.90**

Quality Disc Drives from Watford

To help you decide which drive is the most suitable for your needs (and your pocket!), we have produced the table below.

The first capacity given in the first column indicates capacity in single density mode. That within the brackets is the capacity in double density mode. All disc drive type numbers start with the prefix "C"

The tinting on some of the boxes is used to indicate which Drives are 40 track (non-tinted) and which are 80 track (tinted). All our 80 track drives are already fitted with a 40-80 select switch.

All our Disc Drives are Double Sided and will operate in both Single and Double Density modes. Extensive experience of the usage of disc drives suggests that the JAPANESE drives currently represent about the best in terms of speed, reliability and overall "elegance" available for the BBC Micro.

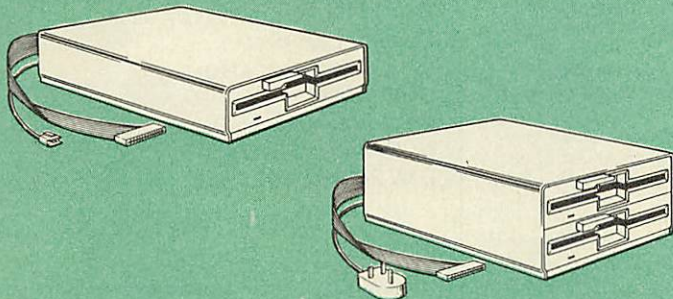
Various UK "manufacturers" of disc drives for the BBC micro (more accurately, "packages" label other manufacturers drives with their own name). We buy the high quality NEC and Mitsubishi drives in large quantities directly from the manufacturers, package them and sell them at "dealer" prices direct to the public.

If you look around the popular BBC micro press, you will find that the prices we quote for the top quality, new slimline disc drives are, virtually without exception, some of the best around. These prices, coupled with the backup of one of the country's largest distributors of BBC peripherals provides a superb deal.

Unless you anticipate using dual drives in a fully expanded BBC system for long periods of time with little ventilation, then we suggest that our range of "CL" disc drives without the PSU (Power Supply Unit) would be quite adequate (extensive tests within our workshops have confirmed this). All drives are supplied complete with a SPECIAL UTILITIES Disc, Cables and Plugs. The Drives with power supply have a mains moulded plug for safety purposes. Ideal for Schools & Colleges. We are now able to supply all single disc drives with Power Supply, in either single or dual case. (Dual case has a twin data cable and a power supply capable of driving two disc drives) allows easy expansion to a dual drive unit, at a later date. Prices stated in the pricing boxes below are for single drives in standard single cases. Single drives in a dual case cost an extra £5. (At Watford we anticipate your needs of tomorrow, not just today!)

When using a BBC Micro, most people find themselves short of desk space. The Watford's BBC Micro plinths form an ideal way of recovering some of this precious space! your BBC, Disc Drive and Monitor can all occupy the same vertical footprint and still be comfortably situated. With the Watford Double plinth, your Disc Drive is mounted vertically at one side, leaving a very valuable area directly in front of you for such useful items as spare discs, pen, paper, reference manuals, etc. Follow the trend with Watford plinth. (Turn to the 5th page of our advert for the Plinths). P.S. All our 5 1/4" Disc Drives with PSU are compatible with the Compact Micro. All you require is the special Compact Disc Drive Cables designed by us.

Our Disc Drives conform to BS415



| Capacity | Drives without P.S.U. | | Drives with P.S.U. | |
|---|-----------------------|------------------|--------------------|-----------------|
| | Single | Twin | Single | Twin |
| 200K (360K) | CLS 200 £89 | | CS 200 £98 | |
| 400K (720K) | CLS400S £82 | CLD 400 £168 | CS 400S £92 | CD400 £188 |
| 800K (1.44M) | | CLD 800S £162 | | CD 800S £182 |
| ● TWIN Disc Drive Case, complete with Power Supply & Cables £43 Securicor carriage on Disc Drives £5 to £6 | | | | |

Prefix C = Cased Drive
L = Less PSU
S = Single
D = Double

Suffix S = 40-80 Switchable

e.g. CLS400S = Cased Disc Drive, Less power supply unit, single 5 1/4" 400K, (720K in double density); Double sided; 40/80 track switchable.

Cable to connect 5 1/4" Disc Drives to BBC Compact
Single £9 Twin £12
Special Cable to connect both 3 1/2" and 5 1/4" Disc
Drives simultaneously to the BBC Compact £13

3M – DISKETTES

3M – SCOTCH Diskettes with Lifetime warranty from Watford Electronics your 3M Appointed Distributor.

| | |
|---|--------|
| ● 10 × 5 1/4" S/S D/D 40 Track Diskettes (744) | £6.00 |
| ● 10 × 5 1/4" D/S D/D 40 Track Diskettes (745) | £7.50 |
| ● 10 × 5 1/4" S/S D/D 80 Track Diskettes (746) | £11.50 |
| ● 10 × 5 1/4" D/S D/D 80 Track Diskettes (747) | £11.00 |
| ● 10 × 5 1/4" 1.6M D/S D/D High Density Discs for IBM XT and AT | £19 |
| ● 10 × 3 1/2" S/S D/D 40/80 track Discs | £10.00 |
| ● 10 × 3 1/2" D/S D/D 40/80 track Discs | £11.75 |
| ● 10 × 3 1/2" High Density Diskettes | £35 |

TOP QUALITY 3 1/2" & 5 1/4" DISKETTES

To complement our range of Quality Discs and Disc Drives, WE are now supplying SPECIAL OFFER packs of 10 Lifetime guaranteed discs. Each disc has a reinforced hub ring. Supplied complete with selfstick labels and a Plastic Library Disc Box.

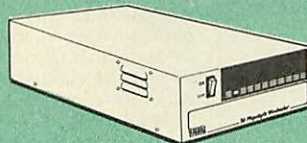
| | |
|---|------------|
| ● 10 × M3 3 1/2" D/S D/D 80 Track Discs | £11 |
| ● 10 × M9 3 1/2" Double Side High Density | £34 |
| ● 10 × M4 5 1/4" S/S D/D 40 Track Discs | £5 |
| ● 10 × M5 5 1/4" D/S D/D 40 Track Discs | £7 |
| ● 10 × M7 5 1/4" D/S D/D 80 Track Discs | £9 |
| ● 10 × M8 5 1/4" D/S H/D Hi-Density Discs | £14 |
| ● 3" Double Sided Discs | £2.50 each |

Special BULK OFFER on 5 1/4" DISCS

(Supplied packed in Anti-Static Lockable Storage Units)
(Lifetime warranty on Discs)

BULK PACK DISCS in lots of 100

| Type | S-S 40T | D-S 40T | D-S 80T |
|-------------------|---------|---------|---------|
| ● Without Sleeves | £35 | £39 | £45 |
| ● With Sleeves | £38 | £42 | £48 |



WATFORD'S WINCHESTER DRIVES

Undoubtedly the best value for money Winchester Hard disc available anywhere for the BBC Micro.

This 30 Megabyte hard disc is completely compatible with the Acorn ADFS – that's why we have bundled it with each Winchester drive, along with a Utilities Disc.

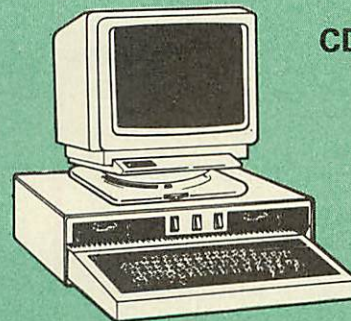
Finished in rugged metal and fetching BBC beige, the Winchester has an internal fan, so quiet you won't even hear it! A switched mode power supply and a neon-lit on/off switch are there along with a light on the hard disc to tell you when it is working – just compare the price with our competitors' 20 or 28 Mbyte discs!

Compatible with the Master, and the BBC B (with 17 X disc interface).

- 10 Megabyte £350; ● 30 Megabyte £420

CDP800S

CDPM800S



Twin 800K Double sided 40-80 track switchable disc drives mounted in an attractively finished Beige colour plinth for the BBC Micro. Supplied complete with integral power supply, cables and Utilities disc. The mains switch with neon On/Off light indicator, and the two 40/80 track switches are mounted on the front panel for ease of use.

CDP 800S for BBC Micro £192

CDPM 800S for Master £196

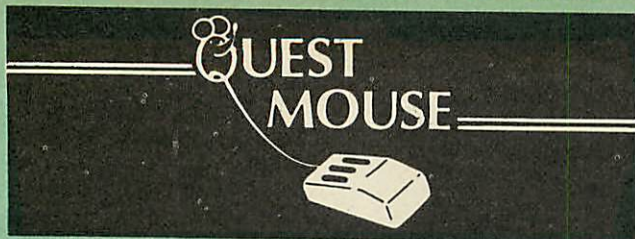
DP35-800 for BBC/Master £165

(For DP35-800S spec. see Page 9 of our advert)

(Securicor Carr. £7)

(The above drive units are 2 Megabytes unformatted)

Continued



QUEST MOUSE

The ultimate in Mouse technology, the Watford Electronics Quest Mouse must be the most powerful Mouse package yet produced for the BBC Micro. Featuring state of the art 32K ROM software the Quest Mouse package is filled with features essential to the budding artist. The Quest Mouse is a high precision, low profile and large footprint mouse. It has three large comfortable buttons and its RUBBER COATED STEEL BALL is smooth and easy to use on virtually any work surface. This also eliminates any directional bias that one encounters on the most well-known mouse for the BBC. The Quest Mouse is FULLY HARDWARE COMPATIBLE with the AMX MOUSE so that it will work with any of the AMX range of software.

The two parts of the Quest package are available separately so that existing Mouse owners can upgrade to the Watford's sophisticated Quest Paint software or replace their existing worn out mice for a minimum cost.

QUEST PAINT

The Quest Mouse software is supplied on a PALPROM unit to allow the sophisticated 32K program to be used from a single ROM socket. It is compatible with the BBC B, BBC B Plus and BBC Master Series machines.

The software is used to draw high resolution Mode 1 pictures in full colour. All menu selection and control of the drawing process is performed with the mouse so that you will hardly ever touch the keyboard.

SOFTWARE FEATURES

The software is far too powerful for us to describe it fully in such a small space. Below is a list of the various features. Please write to us for a fully descriptive leaflet.

Disk interface not required. Utilities disk has facility to create and print big screens. Colours applied can be solid, either pattern of user defined pattern. Drawing can use brush or airbrush. Brush shapes can be defined and stored. Airbrush sprays colour/pattern randomly with four jet sizes and even or center spread. Colour cycles. Colour protection to stop particular colours from being overwritten by selected drawing actions. All standard drawing facilities like: rubber, straight pencil lines, triangles, circles, ellipses, rectangles, parallelograms, polygons, etc are provided. All shapes can be solid or just a boundary line. Once a shape has been set up it can be repeated anywhere on the screen. Global colour replace in a rectangle. Powerful fill facility for areas and vertical/horizontal lines. Full cut and paste of rectangular areas with rotation and size with screens from Watford Beeb Video digitiser. Load and Save screens with colour pallet information, save brush and pattern definitions etc.

Take The Guesswork Out of Selecting a Mouse Package

With reviews like this how can you go wrong.

Popular Computing Weekly, 9-11 June '87

"What you actually get for your money is a well built, three button mouse (far superior to the AMX mouse)."

"Overall the combination of a quality mouse and decent art package gives Watford Electronics a real chance of supplanting AMX as mouse supremos."

Micro User June '87

"Quest Mouse and Quest Paint can hold their heads high in the market..."

A&B Computing June '87

"... Watford Electronics, a company famed for excellent hardware add ons and versatile software packages. Called Quest mouse, 'this is a very special mouse driven drawing package...'"

"... you will have one of the most comfortable and professionally built mice I have used in a long time. The buttons are responsive, the mouse movement is smooth and without directional bias - a pleasure to use."

"What we have here is probably the best art package there is for the BBC Micro..."

"Quest Paint is a major leap forward in BBC programming..."

"Quest Paint is an original piece of programming, it is friendly and well endowed with many useful facilities. I would comfortably say it is easier to draw good pictures with Quest Paint than it is with more expensive 'Professional' art packages for the Atari ST and the Commodore Amiga. A recommended buy if you are looking for the best in BBC micro based art packages."

Acorn User, September '87

"The mouse (Quest) performs well in the face of competition from AMX, Wigmore and the rest..."

"... this package represents excellent value for money. If you are interested in art then this program is for you to buy."

"Given time, I can see no reason why Quest Paint shouldn't take on the title of the definitive art package available for the BBC Micro to date."

"All in all, Quest Paint is a very professional package. It contains virtually every feature the budding artist could require."

"What makes Quest Paint so versatile is the addition of a sub-menu which allows you extensive control over each function."

"Until recently, Superart from AMS had been judged as the definitive mode 1 graphics package for the BBC micro. But now it has a serious rival in the form of Quest Paint, from Watford."

"As a measure of what is contained within Quest Paint, I would say it had all the features of Superart plus..."

"In most art packages, provision is given for drawing triangles and rectangles. Quest Mouse goes 14 better, allowing any regular polygon of up to 16 sides."

"One facility, not found on any other Art package to my knowledge, is the ability to access a digitiser from within the program". The reviewer concludes by saying, "The result is an extremely comprehensive and professional art package".

John Kilby, Head of Computer Science, Bishop Wulstan High School, Rugby, writes:

"Quest has been an excellent piece of equipment. The problem that seems to occur everyday is that at lunchtime the pupils rush to the computer room to make sure that they are first in the queue for the 'Quest' mouse."

Lt. Col. C.G. Holton, HQ 1 (BR) Corps, BFPO 39, writes:

"As ever your service is superb and the Quest Mouse proves every bit as good as the adverts claim."

Beeblet User Group, New Zealand Oct '87:

"One of its nicer features is that the top menu is done in Mode 0, the drawing itself is in Mode 1. Thus on screen together are two different Modes. A neat way around an old problem."

"PAN is used when a larger than one screen size image is required. The mind boggles at an A3 size drawing".

"I like it partly because of the mouse itself which is smooth and easy to handle but mainly I suppose because of the features I longed for and previously never got. Its easy to use with almost everything at your fingertips from the mouse. The software is simple where needed and complex where complexity is required."

ConQuest

Watford's Quest package is an extremely powerful and flexible drawing package, with very wide and unusual features. However, since its launch various suggestions for even more advanced & powerful facilities were received from the Quest users. ConQuest allows you these more advanced facilities, like, distortion of a cutout to any shape and a full font designer. If you also have a GXR ROM in your machine or you are using a BBC Master then ConQuest will take advantage of this to give ellipses at any angle, sectors and arcs, etc. Quest combined with ConQuest and Acornsoft GXR ROM make up THE MOST POWERFUL drawing packages available for the BBC range. Quest Paint is able to take advantage of almost any additions to your machine, such as Shadow or Sideways RAM. ConQuest takes this principal even further, by utilising the otherwise normally incompatible Sideways RAM facility by holding pictures in them.

Some of the features are:

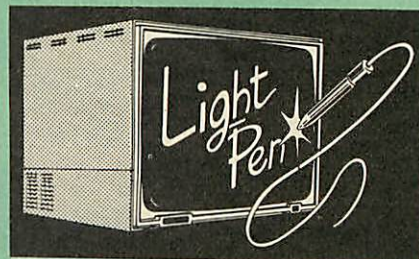
- Pick filenames off the screen for loading and saving.
- Rotate a cutout to any angle and Distort it to any four sided shape.
- Has Built in Font editor.
- Default brushes and patterns on startup.
- 16 x 16 font available on start up.
- Ability to reset patterns, fonts and brushes to default at any time.
- ROM based enhanced Epson and compatible printer dump.
- ROM based enhanced extended picture routine.
- Ability to create and abort extended pictures.
- Improved disk access speed for extended pictures.
- User definable sideways RAM driver for incompatible sideways RAM systems.
- Ellipses at any angle on Master 128 (or B with GXR ROM).

| | |
|--|-----|
| QUEST MOUSE & QUEST PAINT | £49 |
| QUEST MOUSE, QUEST PAINT, AMX | |
| PAGEMAKER & PAGEFONT | £82 |
| QUEST MOUSE ONLY | £25 |
| QUEST PAINT SOFTWARE | £32 |
| QUEST FONT DISC | £12 |
| ConQuest 32K ROM Package | £29 |
| QUEST MAT | £3 |
| Part-exchange your old Mouse for a New | |
| QUEST MOUSE for only | £23 |
| GXR ROM for BBC Micro | £22 |

N.B.

1. Quest Paint supplied complete with Software in a 32K ROM, Comprehensive User Guide and a Utility Disc.
2. Quest Font Disc has 22 text FONTS for use within Quest Mouse.

MARK II LIGHT PEN



Our Mark II Light Pen is the very latest in light pen technology. It is totally insensitive to local lighting conditions and works with many different monitors. The pen only responds to the High Frequency light produced by your monitor/TV. An LED indicates when valid video data is being produced. A conveniently located switch is also fitted.

Price Only £21

(Price includes FREE software Disc and Operating Manual)

RB2 Marconi Tracker Ball

RB2 (AMX/Quest compatible) £49
RB2 including Quest Paint £78

FLEET STREET EDITOR

Software pack for BBC Micro £33
Software pack for the Master £39
Software Pack for Compact £40
Admin Xtra Disc Utility £13
Walt Disney Disc Utility £13
Fonts N Graphics Disc Utility £13

THE NEW Mk III AMX MOUSE

ONLY: £59 Inc. Super Art package
(carr £1.50)
(Please specify for BBC, Master or Compact)

FREE our popular Colour Art software pack worth £15 with every AMX Mouse package purchased from us.

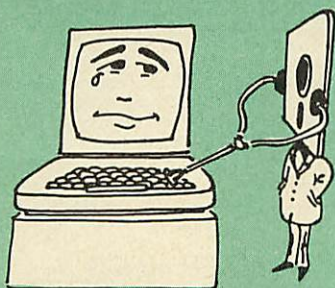
MOUSE MAT £3
AMX MOUSE ONLY £29
AMX UTILITY Package £11
AMX SUPERART Package £34
AMX STOP PRESS – A Desktop publishing software. Works with Keyboard, Joystick or a mouse £32

We are giving away absolutely FREE, our PAGE-FONT disc with every purchase of STOP PRESS from us.

PAGE-FONTS – Over 20 Fonts for use with AMX Pagemaker £12

AMX DESIGN (ROM) £55
AMX XAM Educational £15
AMX EXTRA EXTRA £16
AMX MAX A gem of desktop (ROM) £15

DIAGNOSTICS DISC



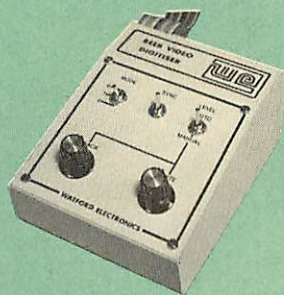
The BBC Micro is a very complex machine and thus diagnosing a fault can be very difficult. At Watford Electronics, we realise how difficult it can be when faced with a problem, finding yourself a long way from your nearest dealer, or even just uncertain about your Beeb's health, but not wanting to waste time and money taking it to be looked at.

The solution to these problems is here now, in the form of the Watford's Diagnostics Disc. This excellent utility is specially designed to test out the following areas of your Beeb: RAMs, ROMs, ULAs, Sound, Keyboard, Disc, RS423, ADC, User Port, Printer Port, Cassette, Joysticks, Speech, Disc Drives, 6502 and Z80 2nd Processors.

This utility is an invaluable aid for all those who take the reliability of their system seriously. A comprehensive manual provides full operating details and a list of possible causes and remedies for any faults that you may find along the way. The package also enables a permanent equipment and service record to be maintained.

Only £20.00

BEEB VIDEO DIGITISER



Using any source of composite video (colour or monochrome) and the Watford Beeb Video Digitiser, you can convert an image from your camera into a graphics screen on the BBC Micro.

This uses the full graphics capacity of the BBC micro in modes 0, 1 or 2. The video source may be a camera, video recorder or television, and is connected via the video output socket.

Images produced can be compressed, stored to disc, printed on an Epson compatible printer, directly used to generate graphics, analysed for scientific and educational use or converted to other formats e.g. Slow Scan TV or receiving a picture from a remote camera using a modem.

The output from the digitiser exactly matches the graphics capability in each mode, with up to 8 levels of grey in mode 2. The unit connects into the User Port and automatically scans a complete picture in 1.6 seconds.

Both the black and white levels can be adjusted manually for the optimum picture, or switched to automatic for unattended use. The image produced can be reversed if necessary.

Full controlling software is supplied on a normal sideways ROM and this is easily accessed via additional * commands. The package is designed to allow easy input of complex screens and give full access of the data to the user. Once on the screen, the image can be used as a normal graphics screen, allowing any of the usual graphics commands in BASIC or other ROMs to work on it.

A special print dump routine is included with the driver programs. This is specially designed to produce a fast, correctly proportioned picture, with reduced "contouring", resulting in an accurate reproduction of the original image.

Detailed examples of driving this unit from BASIC or other languages are all provided in the extensive manual supplied.

£109 (Carr. £3)

(Price includes) Digitiser Unit, Software in ROM & a Comprehensive Manual
(BBC B+ and Master compatible, except Master with Econet)

Magazine Maker

(As seen on TV)

A combination of the Pagemaker and Watford's Beeb Video Digitiser.

Using any video that provides a composite signal and the digitiser, images from a camera or TV can be converted into a graphics screen on the BBC Micro.

They can then be used within Pagemaker to illustrate magazines or newsletters – in fact anything that needs to be created on A4 size paper.

With Pagemaker's many features, a variety of pictures can be composed – the only limit being the imagination.

Pictures can be doctored using Pagemaker's graphics option to produce any number of effects.

Text can be formatted around the digitised photo on screen using the facilities available, which include 16 typefaces, character and pattern definer, text formatting and the ability to load in wordwise and viewfiles plus much more.

Once created the picture can be printed out. The Magazine Maker is suitable for any use that requires illustrated documents.

Complete Package £135.00 (carr. £3)

OFFICE MASTER



CASHBOOK – A complete "Stand Alone" accounting software package for the cash based sole trader/partnership business. It is designed to replace your existing cashbook system and will provide you with a computerised system complete to trail balance.

FINAL ACCOUNTS – Will take data prepared by the Cashbook module and produce a complete set of accounts as following: Trial Balance with inbuilt rounding routine; Notes to the accounts; VAT Summary; Profit & Loss A/C; Balance Sheet.

MAILIST – A very versatile program. Enables you to keep records of names and addresses and then print, examine, sort and find them, all with special selection techniques.

EASILEDGER – A management aid software tool designed to run alongside an existing accounting system. Essentially a Debit/Credit ledger system which can handle sales, purchase and nominal ledger routines to provide instant management information.

INVOICES & STATEMENTS – Greatly reduces the time and cost of preparing Invoices and Statements by storing essential information like customer names, addresses and account numbers. Has VAT routines and footer messages facility.

STOCK CONTROL – Allows you to enter stock received, stock out, summary of stock items and current holdings together with details of total cost, total stock to minimum level, units in stock ordering, quantity and supplier detail.

All this for only £21 (Disc)

OFFICE MATE



- DATABASE
- BEEBCALC SPREADSHEET
- BEEBLOT GRAPHICS

DATABASE – Set up a computerised card index system with powerful search facilities.

SPREADSHEET – Offers many calculation and editing features.

BEEBLOT – Provides visual representation from Spreadsheet data.

OFFICE MATE Only £10 (Disc)

Disc Drives DP35-800S



A Double disc drive – with a difference! Times are changing fast for the floppy disk, and whilst the current standard for the BBC B and Master Series is the 5.25 inch disk, the standard for the future will most certainly be the smaller; faster and more reliable 3.5 inch disks – now a standard feature of both the Master Compact and the Archimedes Series.

To support the present disc drive users, and cope with the future, we have designed our own plinth-mounted disk system – called the DP35-800S, it contains both the 5.25 inch and the 3.5 inch drive formats as well as offer a firm and rigid support for a monitor on top. With the BBC Micro underneath, the plinth makes a surprisingly small footprint on the desk – leaving you more space to work with.

The 5.25" disc drive is 40/80 track switchable. For ease of access, the switches are front mounted. DP35-800S has its own power supply, independent of the BBC Micro.

Watford's new plinth enables users to read, write and format disks both in DFS and ADFS format – currently the accepted standard for the Master Compact and the Archimedes, it also enables the user to read disks written for the Archimedes. Ideal for both BBC & Master.

Launch Offer: £165 (carr. £7)

Continued



ARIES CORNER

B-32 Shadow RAM Card

Like the BBC B+, the B32 provides 20k of shadow screen RAM and 12k of sideways RAM. Unlike the B+, the B32 has simple software commands which allow the user to reconfigure the RAM as 16k of shadow RAM and 16k of sideways RAM, or all 32k as sideways RAM.

With the B32, the programmer gets up to 28k of RAM available for Basic, Logo, Comal, Forth, Lisp and BCPL programs in any screen mode. The business user gets extra memory for View, ViewSheet, Wordwise Plus, Interword and many other applications. For advanced applications, the scientific user gets access to a massive 47k of data storage using the Acorn approved *FX call.

Sideways RAM enables you to load sideways ROM images from disc, allowing you to have a large library of sideways ROMs (subject to the copyright holder's permission) stored on disc. The B32's sideways RAM can also be used to extend any operating system buffer (such as the printer buffer) or to load tape programs into a disc system.

The B32 simply plugs into the 6502 processor socket on your BBC micro – no flying leads to connect and no soldering. Provision of the on-board ROM socket means that the Aries-B32 control ROM does not use up one of your existing ROM sockets.

● Recommended by Computer Concepts for use with their Inter series of ROMs.

Price: **£80** (carr. £2)

Aries B-12 Sideways ROM Board

This board is extremely well made, simple to install, reliable when fully loaded and compatible with the Aries-B20 and the Aries-B32.

The B12 provides a total of twelve sideways ROM sockets (the four in the original machine are replaced by the twelve on the board), all fully accessible by the MOS sideways ROM system. In addition, there are two sockets for sideways RAM, giving up to 16k of RAM using 6264 static RAM chips.

The B12 system consists of two parts: a large detachable "mother board" which carries the extension ROM sockets and a small "base board" on a short ribbon cable, which plugs into the existing sideways ROM sockets. This two-board design eliminates the reliability problems previously associated with some other ribbon-cable based systems.

If you do not have a B32 or B20, a small adaptor module (the Aries-B12C) is available at a nominal cost.

Price: Aries B-12 **£40**
Aries B-12C **£5**

ARIES B-488 IEEE-488 INTERFACE UNIT

The Aries-B488 is an interface unit to enable the BBC micro to control and monitor IEEE-488 bus systems. The IEEE-488 bus (also known as the 'GPB' or 'HP-IB') is the standard method of interconnecting programmable laboratory instruments and control equipment. Using the B488, up to 15 devices may be connected in a single high-speed data network.

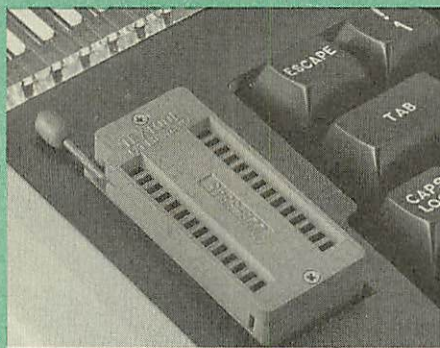
£238 (Carr £3)

EXTERNAL ROM BOARD for BBC MASTER

This external Beige finished, free standing cased unit with its own Power Supply allows you to plug-in up to 12 ROMs and 16K Sideways RAM.

Only **£78**

SIDEWAYS ZIF SOCKET



Allows you to change your ROMs quickly and efficiently, without opening the lid. The ZERO INSERTION FORCE (ZIF) socket is located into the ROM Cartridge's position.

● Very simple to install. NO SOLDERING required. The ZIF (Zero Insertion Force) eliminates the possibility of damage to your ROM pins when inserting & extracting.

● The low profile of the socket allows unrestricted access to the Keyboard.

● All data and address lines are correctly terminated to ensure correct operation of suitable ROMs with the BBC micro. We also supply a purpose designed see-through storage container with anti-static lining, allowing you to store up to 12 ROMs, protecting them from mechanical and static damage.

● This versatile hardware solves the problem of running out of socket space. Simply lift the ROM from the ZIF & insert a different one (No pulling or pushing of Cartridges. It is a must for all professionals and Hobbyists alike.)

● BBC, B+ and Master compatible.
ONLY £16 (carr £2)

Low Profile CARTRIDGE SYSTEM

Complete System consists of: Low profile ROM Cartridge, Socket housing, Cable assembly, 5 labels and a library storage rack for the BBC B.

● Complete System **£11**
● Spare Cartridges **£2.50**
● Spare Rack **£1.50**

ROM Cartridges for the BBC Master
Twin **£8**; Quad **£12**

16K DISC RAM

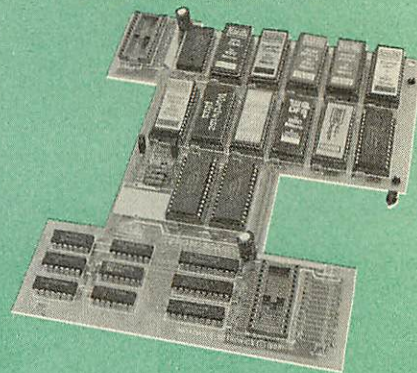
Complete with such features as read and write protection, these new modules from Watford Electronics are ideal for the hobbyist, software developer and ROM collector. Key points to note about this new addition to the Watford range of products are:

- Write protection (useful in a variety of circumstances).
- Read protection (allows recovery from ROM crashes).
- Compact construction.
- Supplied complete with Battery Backup.
- Multiple units may be fitted, even with a ROM board.
- No overheating or overloading problems.
- Free utilities disc supplied.
- Can be used as a 16K PRINTER BUFFER.
- Ideal for professional software development.
- Supplied with utilities software disc.

Only: **£35** (carr £2)

P.S. 16K Disc Ram Board is not designed to work in conjunction with a Sideways ROM Board.

SOLDERLESS SIDEWAYS ROM SOCKET BOARD



In the May 1986 Micro User's independent review, the writer concludes, "The board has been well laid out. Its position is much better than others – not over the HOT RAM chips and further away from the disc controller area". "I give the solderless ROM board the thumbs up and wish it success".

This brand new board from Watford Electronics is designed specifically for those wishing to add a ROM board to their own BBC without the need to perform any soldering.

This new board expands the total possible number of ROMs in a BBC from 4 to 16.

Unlike our competitors inferior boards, the ONLY upgrade required for fitting battery backup to the Watford Solderless ROM board (all Watford ROM boards, actually) is the fitting of the battery itself. (No other expensive components are required.)

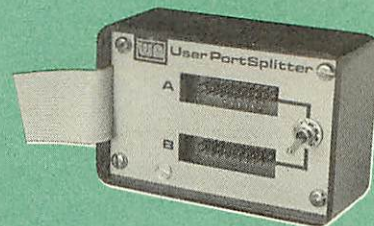
- The key features of this new, no fuss, easy to install quality product from BBC leaders Watford Electronics are as follows:
- Increase your BBCs capacity for ROMs from 4 to 16.
- No soldering required.
- Very low power consumption.
- Minimal space required.
- Compatible with Torch, DDFS, RAM Card, 2nd Processor, etc.
- Socket 14 takes two 6264 RAM chips.
- Read protect to make RAM "Vanish" allows recovery from ROM crashes.
- Battery backup option for RAM chips.
- Supplied ready to fit with comprehensive instructions.

Price: Only **£32**
Battery backup fitted **£36**
Battery Backup only **£3**
(carriage £2)

● Sideways RAM Utilities Disc for Solderless ROM Board. Includes the options to load and save ROM images and the facility to use Sideways RAM as Printer Buffer.

Only: **£8**

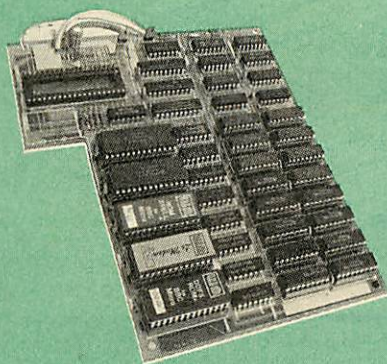
USER PORT SPLITTER UNIT



Gone are the days when you had to plug and unplug devices from the User Port. This extremely useful little device allows two units to be connected to the User Port simultaneously, and select between them simply by toggling a switch. This device is particularly useful for those people using Quest Mouse and the Watford Video Digitiser or any similar combination.

Excellent Value at **£22** (carr £2)

ROM/RAM CARD



Watford Electronics announced the first ever commercial ROM board for the BBC micro, the Watford Electronics 13 ROM Socket Board 3 years ago. Following the success of this board, we have designed what probably represents the ultimate in expansion boards, the new Watford Electronics ROM/RAM board. This highly versatile and sophisticated board represents the latest in "2nd generation" sideways ROM technology for the BBC micro, designed to satisfy the serious BBC user.

- NO SOLDERING required to fit the board.
- NO overheating problems.
- No User Port corruption (avoids problems with the mouse, modems, Eprom Programmers, etc.)
- Fully buffered for peace of mind.
- Firm mounting in BBC micro.
- Compatible with all BBC micros (not BBC+ or Master).
- Total number of ROMs increased from 4 to 8.
- Up to 8 banks of sideways RAM (dynamic).
- Option for 16k of Battery backed CMOS RAM (CMOS RAM needs one ROM socket).
- Software Write protect for ALL RAM.
- Read protect for CMOS RAM (ALLEVIATES crashes during ROM development).
- Separate RAM write register (&FF30 to &FF3F).
- Automatic write to currently selected RAM socket for convenience.
- Accepts any ROM.
- FREE utilities disc packed with software.
- Compatible with our DDFS board, 32k RAM Card, Delta Card, sideways ZIF, etc.
- Large printer buffer.
- UNIQUE Fully implemented RAM FILING SYSTEM (similar to the popular Watford DFS).
- ROM to RAM load and save facilities.

The SFS (Silicon Filing System) can utilise up to the full 128k of RAM (with the SFS in any paged RAM) as a SILICON DISC. This behaves as a disc drive, with all the normal Watford DFS features (including OSWORD &7F for ROM-SPILL, etc.) to provide an environment that looks like a disc but loads and saves MUCH faster.

The ROM-RAM Board plugs into the 6502 CPU socket. This leaves free all the existing ROM sockets, which can still be used normally.

Any ROM that can be plugged into the BBC micro's own ROM sockets may be used in the ROM-RAM Board.

The ROM-RAM Board is supplied with all ordered options fitted as standard. Upgrade kits (with full instructions) are available for all of the options, for later.

Please write in for further details.

INTRODUCTORY PRICES:

- ROM/RAM card with 32k dynamic RAM£48
 - ROM/RAM card with 64k dynamic RAM£65
 - ROM/RAM card with a massive 128k dynamic RAM£109
- (carriage on ROM-RAM Card £3)

OPTIONAL EXTRAS:

- 16k plug-in Static RAM kit£17
- 16k Dynamic RAM for Upgrade£17.50
- Battery backup£3
- Read and Write protect switches£2 each
- Complete ROM-RAM board
- All options installed£115

P.S.

Is your existing ROM Board overflowing with ROMs? Do you need more Sideways RAM? Is your Board unreliable? Then upgrade to Watford ROM/RAM Board and pay £5 less

Le Modem



The MODEM from Watford

At last a professional MODEM for the BBC Micro. Unlike other 'Modem packages' this is a complete package there are no extra software costs to get 'up and running'. Of course Le MODEM is multi-standard, i.e. 300/300, 1200/75 & 75/1200 UK and BELL (USA) are all supported.

The features that make Le MODEM such good value are:

- A complete communications terminal that transforms your BBC Micro into a very powerful World-wide data transfer system.
- Auto Dials, Auto answers, and is completely controlled by your micro. There are no external controls!
- Allows you to access PRESTEL, B.T. GOLD, THE SOURCE, MICROLINK, MICRONET, MICROWEB, THE TIMES NETWORK, MICRO LIVE (BBC TV database), CITY BB and more.
- Designed to be SIMPLE but SOPHISTICATED. To LOGON to a data base all you have to know is its TELEPHONE NUMBER, Le MODEM does the rest.
- Supplied with a comprehensive telecomms package in a 16K sideways ROM which includes a FULL PRESTEL terminal allowing TELE-SOFTWARE to be downloaded.
- A comprehensive 80 column terminal. This includes XMODEM error checked transfer protocol, to allow error free data transfer anywhere in the world!
- FULLY controlled by simple **COMMANDS allowing you to control it from your own BASIC programs. To get you started we supply a FREE disc of bundled software!
- Connects to the 1MHz bus. A *AUDIO ON-OFF command allows you to actually hear the telephone line through your BBC micro loudspeaker.
- Completely self contained with internal mains power supply. (Even a free mains plug is fitted!) A *TEST facility gives ON SCREEN indication that Le MODEM is working correctly.
- Packaged in such a way that you need nothing else except a BBC Micro to communicate with computers all over the world.
- FREE Registration to MicroLink.

SPECIAL OFFER

Price: **£75**
(carr £3)



(Price includes, Le Modem, Software ROM, Cables & Comprehensive Manual)
(Write in for further details)

REPLICA 3

This new improved REPLICA 3 from Clares is a very powerful disc based TAPE to DISC Utility. It now transfers even more programs than ever before. Replica 3 will not work with all programs but then neither will anything else. 30,000 Replicas have been sold to date. It has to be good.

£15 (40 or 80 track)

Acorn's Speech Synthesiser
package, complete
Special Offer £18

APOLLO



The NEW Modem from Watford

Following numerous requests from you, our discerning customers for an APPROVED, Low Cost & High Performance modem with Auto Dial & Auto Answer facilities (as standard) we bring you the versatile APOLLO Modem. Just compare the features and look at the price (which incidentally includes the cost of the Software, manual and BBC connecting cable). We are sure you will agree that Watford Electronics in their traditional way are giving you a super 'value for money' deal.

Just look at these features:

- V21 for Bulletin boards, Microlink, Telecom Gold, etc.
- V23 for Prestel, Home Banking, and other Viewdata services.
- Reverse V23 allows User run Viewdata service.
- 1200-1200 half duplex for communications.
- XMODEM, HEX and ASCII file transmission.
- Auto Dial of given 'phone number.
- Auto Answer for User's Bulletin Board.
- 80 column terminal with split screen facility.
- Prestel text screen dump.
- Fully BABT approved.
- FREE Registration to MicroLink.

The Apollo is attractively finished in matt black. It opens the doors to world communication to both, the Hobbyist and the Professionals alike. With baud rates varying from 300/300 Originate and Answer, 1200/75 and 75/1200 full duplex and 1200/1200 half duplex, virtually all the popular tele-services can be accessed. A comprehensive Comms ROM overrules the use of the APOLLO, providing simple commands for all the software controlled facilities. APOLLO is an ideal modem for both the first time buyer and the seasoned user. Join the Telecommunications Revolution - Buy a Watford APOLLO!

Only: **£82** (Carr £3)

Price includes, the Modem, Comm Software Cables & Operating Manual.
(Write in for full specification)

VOLTMAZE JOYSTICKS

| | |
|-------------------------------|-----|
| Delta 3B Single Joystick | £10 |
| Delta 3B Twin Joysticks | £15 |
| Delta 3C Joystick for Compact | £10 |
| Delta 14B Single Joystick | £11 |
| Delta 14B/1 Adaptor Module | £12 |
| Transfer Software Disc-Tape | £7 |

ATTACHE CARRYING CASE

For the BBC Micro. Attractively finished in antique brown leatherette. Lockable.
Only **£10** (£2 carr.)

Versatile BEEB SPEECH SYNTHESISER Unit



The Watford Speech Synthesiser is a very flexible speech synthesis unit based upon the powerful phonemes system. This system stores the building blocks of speech (called phonemes) and allows you to combine them quickly and easily to form virtually any word imaginable.

Supplied with an advanced ROM, you are provided with a 500 word dictionary to get you started. These can easily be added to by following the notes given in the comprehensive manual.

SPECIAL PRICE **£32** (carr £2)

Continued

COMPUTER CONCEPT'S ROMS

| | |
|-------------------------|-----|
| ACCELERATOR | £30 |
| CARETAKER Basic Utility | £23 |
| DISC DOCTOR | £28 |
| Graphics ROM | £29 |
| TERMI | £25 |
| COMMUNICATOR | £49 |
| Printmaster | £24 |

Wordwise

£23

Wordwise plus

£40

We are giving away absolutely **FREE**, the superb Word-Aid ROM worth £24, with every WORDWISE PLUS package bought from us.

Word-Aid

The most comprehensive utilities ROM for Wordwise-Plus

Extend the power of your Wordwise Plus word processor with this most advanced ROM from Watford. By utilising the powerful Wordwise Plus programming language, WordAid provides a whole host of extra features, all accessed via a special new menu option. This ROM has been personally approved by Mr Charles Moir, the author of WORDWISE PLUS.

- Alphabetical sorting of names and addresses.
- Text transfer options.
- Chapter marker.
- Epson printer codes function key option.
- Search and display in preview mode.
- Embedded command removal.
- Print Multiple copies of a document.
- Multiple file options for print and preview.
- Address finder.
- Label printer.
- Mail-merger.
- Number/delete/renumber.
- Clear text-segment area.
- BBC B, B+ and Master compatible.

Only £24

(N.B. Word Aid requires a Disc Interface in your Micro)

HI-WORDWISE-PLUS DISC: £5

SPELL MASTER £42

Inter SHEET ONLY £37

INTER-CHART

ONLY: £25

Inter-WORD

£36

MEGA-3 ROM

Interword, Intersheet & Interchart – 3 in one ROM

£76

INTERBASE £49

All Prices Exclusive of VAT

VIEW

VIEW WORDPROCESSOR 2.1 £35

VIEW 3.0 ROM £48

VIEW PROFESSIONAL £59

HI-VIEW (for 6502 2nd Processor) £36

VIEW SHEET (Acornsoft) £36

VIEWSTORE £36

VIEWSPELL with 80 track disc £29

VIEWPLOT Disc £20
(Please specify for Master 128 or Compact)



CREDIT CARD 24 HOUR
Ansaphone Hot Lines
(0923) 50234 or 33383

VIEW-INDEX £12

OVERVIEW Packs 1 & 2 £69

Watford's own Sophisticated VIEW PRINTER DRIVERS

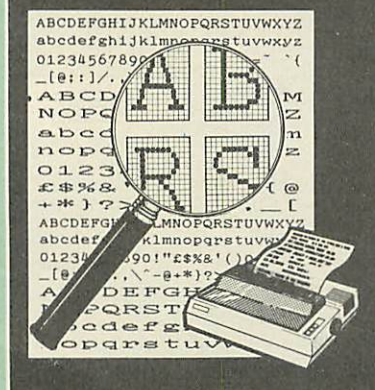
Epson FX80 & Kaga KP (Disc) £8
Juki & Brother HR15 (Disc) £8
Silver Reed Printers (Disc) £8

MINI OFFICE II

DISC Version for BBC B & B+ £14.00
DISC Version for BBC Master £16.50
ROM Version £43.00

(When ordering please specify for which Micro & 40 or 80 track Disc).

EPSON NLQ ROM for the BBC Micro



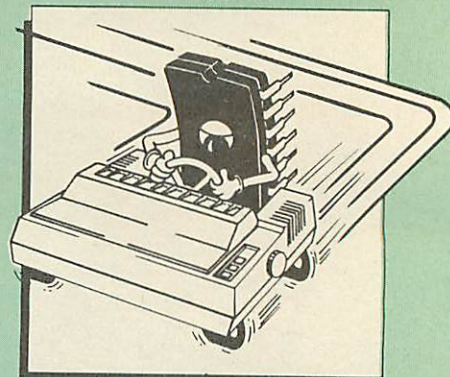
Harness the full potential of your Epson RX or FX printer. The NLQ ROM makes Epson printers produce Near Letter Quality output with optional proportional spacing, enlarged and underlined. Accessed by simple * commands from Basic, Wordwise and View (with driver) or almost any other language.

(Send an SAE for sample printout)

Only: £25

VIEW PRINTER DRIVER for NLQ ROM £7

VIEW PRINTER DRIVER ROM



View is a powerful word processor, but until now has seriously lacked in terms of printer support. With the launch of our Printer Driver ROM, which includes an extremely powerful and easy to use Printer Driver Generator, View users can find themselves in the realms of advanced word processing only at a small outlay.

The VPD extends View's printer command with a series of mnemonic commands. All standard highlight sequences are also supported. A large range of printers are supported by drivers contained within the ROM (the drivers can be downloaded and customised). Printers supported include: Epson's MX, RX, FX, LX, JX80 range, Hi80, KP810/910, PW1080, JP101, HR15, M1009, GLP, Panasonic KX-P1081/2, JUKI 6100, etc.

Other printers are readily supported by defining a Printer Driver using the built in Printer Driver Generator. The features mentioned below are available to both the built in Printer Drivers and user defined drivers (assuming the printer supports the features).

NLQ control, Underline, Bold, Proportional Spacing, Microspacing, Italic, Superscript, Subscript, Condensed, Enlarged, Double Strike, Set lines per inch numerically (e.g. LPI 6), Set characters per inch numerically (e.g. CPI 5), Select printer font, Select printer ribbon colour, Translation sequences, Emulation of BBC Character Set, Simple numeric expressions for certain operations, Full printer setup, Send control codes, Print prompt on screen, Redefinable Pad character, Pause for key press, Prompt to change daisywheel, and Execute * command when printing.

Other features include a very powerful on screen preview, with bold, italic, underline, super/subscript, enlarged highlights, and a special printer driver to allow memory based text to be previewed by View 1.4. Of course, View 1.4, 2.1 and 3.0 are all supported, as is Shadow RAM and 6502 Second Processors. The BBC B series and Master series of micros are supported. A comprehensive manual is supplied. All in all, a very professional product for the discerning user who wants power at their finger tips. (Write in for a detailed leaflet).

Price: Only £33

ROM-SPELL

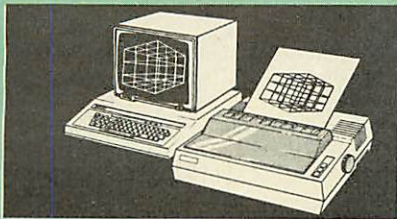


Probably the most advanced and fastest spelling checker available for the BBC Micro. Compatible with View, Wordwise and Wordwise Plus ROMSPELL is simple to use with easy editing of incorrect words. Full facilities for editing the user dictionary to allow customisation to your personal needs. Dictionary includes over 30,000 words and is supplied with a Comprehensive manual.

NOT compatible with 1770 DFS.
(Please state 40 or 80 track disc)

Price still only: £25

DUMPOUT 3



A highly sophisticated screen dump ROM. This has to be the most flexible and powerful screen dump ROM yet produced for the BBC micro. It will put on paper anything you see on the screen, including full Mode 7 graphics. Also provided are window setting utilities and OSWORD calls to plot and read Mode 7 graphics pixels.

Facilities:

- Vertical and horizontal scaling in all graphics modes and mode 7
- Rotation of image by 90, 180 or 270 degrees
- Left hand margin setting
- Screen dump window setting
- Colours appear as grey scale
- Two tone fast dump
- Colour mask
- Mode 7 contrast expansion
- Mode 7 contiguous dump
- Key triggered and User Port triggered dumps

The Micro User Feb. 1985.

"Without reservation I wholeheartedly recommend the Dump Out 3 ROM as the ultimate screen dump facility for the BBC Micro ... it must represent excellent value for money and surely cannot be beaten".

For use with the following printers:

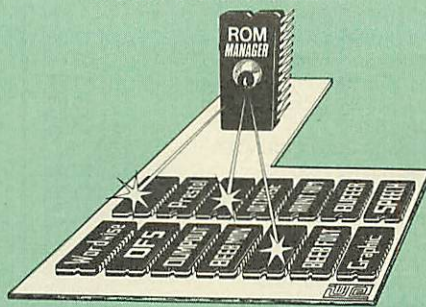
GLP, GP80/100/250, CANNON, STAR, KAGA/TAXAN, NEC, SHINWA CP80, GEMINI, EPSON MX/RX/FX, M1009, NEC PC8023, DMP100/200/400, Panasonic KX1081/82, Mannesman Tally and compatibles.

Only: £25

BBC SOFTWARE'S Popular Educational Software

- Maths with a Story 1 (Disc). 4 primary level maths programs **£11.25**
- Maths with a Story 2 (Disc) 4 further maths programs **£11.25**
- Picture Craft (Disc) 6 - 14 age group. Pack consists of flexible geometrical design & colouring programs **£17**
- WAVES: Science Topics (Disc) CSC O Level Physics program. **£14.95**
- RELATIONSHIP: Science (Disc) O Level Biology program. **£20.00**
- BONDING: Science (Disc) O Level Chemistry program. **£20.00**
- ELECTROMAGNETIC SPECTRUM (8 Discs) O Level program. **£20.00**
- ELECTRONICS IN ACTION (Disc) O Level program. **£19.95**
- NEWTON & THE SPACE SHUTTLE (Disc) O Level program. **£20**
- ECOLOGY (Disc) O Level program. **£20**
- POLYMERS (Disc) O Level program. **£20**
- Classification & Periodic Table O Level. The suite is supplied with its own database of chemical elements which can be classified according to your own rule. **£20**
- FOOD & POPULATION (Disc) O Level program. **£20**
- MICROTECHNOLOGY (Cassette) O Level program. **£11.25**
- A VOUS LA FRANCE (2 Cassettes) A French language home study aid. **£21.70**
- DEUTSCH DIREKT! (Disc & Audio Cassette) **£19.95**
- Modem Master (Disc) **£11.25**
- ADVANCED TELETXT SYSTEM **£8.65**
- PERIOD TABLE SOFTWARE **£20**
- Astronomy - Primary (Disc) **£12**
- Computers at Work - Primary **£17.35**
- Introducing Geography - Primary **£17**
- Introducing Geography 11-17yrs **£17.50**
- Electric Fields 6-14 years **£11.25**
- BlackQueen Contract Bridge **£13**
- Espana Viva - 3 Discs **£19.95**
- A Vous La France Disc **£21.50**

ROM MANAGER

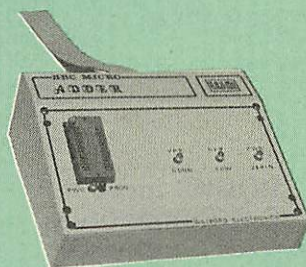


Take control of your Sideways ROMs with ROM Manager. This powerful utility ROM gives you power over your sideways ROMs. Disable whole ROMs, send commands directly to named ROMs and many other powerful facilities.

"Provides comprehensive management of all your installed ROMs". (BEEBUG November '84.)

ONLY £20

ADDER



The only low cost EPROM Programmer for the BBC Micro that will program both the standard 21V and the new 12V5, 27128 EPROMS.

Adder is the ultimate EPROM programmer for the BBC Micro. It will program many different EPROMs up to the very latest 27256 32K devices.

The Adder unit connects to the User Port and draws its power from there too. The EPROM is mounted in a top quality ZIF socket. There are no switches or controls as Adder is entirely software controlled.

The Adder software provides sophisticated facilities for programming EPROMs from a RAM image produced by loading disc files. The software is menu driven and designed for ease of use.

Features:

- Two ultra fast programming algorithms or standard slow algorithm.
- Supports standard 21V programming and newer 12.5 volt EPROMs. (Software switched).
- The RAM image to be programmed can be built up in many ways. Sections of image can be loaded separately. Part programming. Read EPROM. Edit data in memory.
- Automatic processing to handle a list of files to program into the EPROM.
- Automatic disc buffering to allow programming of 32K 27256 devices from a 32K file without extra effort.
- Verification gives detailed error list and checksums are maintained. There is also a blank check facility.
- Works with all standard filing systems. Generates header code for RFS ROMs to allow Basic programs etc. to be stored in EPROM. More than one file per ROM permitted.
- Programs the following EPROMs:
From 2K to 32K: 2516, 2716, 2532, 2732, 2764, 2764A, 27128, 27128A, 27256 (Both 12.5V and 21V).

£75 (£3 Carr)

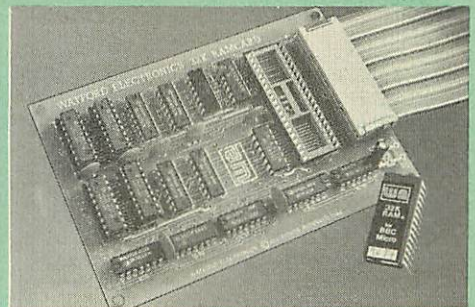
TEX EPROM ERASERS

EPROMs need careful treatment if they are to survive their expected lifetime. Over erasure of EPROMs very rapidly turns them into ROMs! The TEX erasers operate following the manufacturers specifications to give the maximum possible working life by not erasing too fast. We use these erasers for all our own erasing work.

- ERASER EB - Standard version erases up to 16 chips. **£28 (carr £2)**
- ERASER GT - Deluxe version erases up to 18 chips. Has automatic safety cut-off to switch off the UV lamp when opened. **£30 (carr £2)**
- Spare UV tubes. **£9**

32K

SHADOW RAM- Printer Buffer Expansion Board



A MUST FOR WORD PROCESSING

Watford Electronics now brings you the latest state-of-the-art MEMORY EXPANSION BOARD for your BBC microcomputer. Don't throw away your BBC B for a BBC B Plus or BBC Master. Just plug the ribbon cable into the 6502 processor socket, and fit the compact board inside the computer. Immediately you will gain not 16K or even 20K, but a massive 32K of extra RAM!!!

- IMPROVE your WORD PROCESSING system, whether disc or cassette based. Don't wait for a slow printer - type in text while printing. TWO JOBS DONE SIMULTANEOUSLY and £100+ saved on a printer buffer.

- "VIEW" Wordprocessor users can now type in letters in 80 columns and have up to 28,000 bytes free - 5 times as much as normal.

- In WORDWISE (or WORDWISE-PLUS), preview in 80 columns with the full 24K of text in memory. This product is recommended as an ideal complement by Computer Concepts.

- Combine GOOD GRAPHICS and LONG PROGRAMS. Use the top 20K of the expansion RAM as the screen display memory, leaving all the standard BBC RAM free for programs. Benefit from MODE 0/1/2 graphics and 28K of program space.

- Use the FULL 32K or the bottom 12K of the expansion RAM as a PRINTER buffer for PARALLEL or SERIAL printers, sound channels, RS423 etc. Print large text files while running long graphics programs, and have all your buffer options available as well (*FX15, 21, 138, 145, ADVAL etc). Please note only a 12K printer buffer can be used with Wordwise or Wordwise-Plus, due to the way they are written.

- Unique facility to turn ROMs off and on again. Unlike all other ROM managers, this feature does not use 'unofficial' memory. Two bytes of normally user-inaccessible memory on the RAM card are used to ensure ROMs are disabled WHERE OTHER ROMS FAIL.

- Recommended by Computer Concepts for use with their Inter series of ROMs.

Only £59 (carr £2)

(Price includes a comprehensive manual and the ROM)

INCREDIBLE WORDPROCESSING DEAL

Watford's 32K SHADOW RAM CARD and Computer Concept's INTERWORD Wordprocessor package.

at Only **£89 (carr £2)**

Continued →

BOOKS (No VAT on Books)

| | |
|---|--------------|
| 15 Hr Wordprocessing BBC/View | £5.95 |
| 15 Hr Wordprocessing BBC/WW & WW+ | £5.95 |
| 30 Hour BASIC (BBC Micro) | £9.95 |
| 6502 Assembly Language Program | £19.95 |
| 6502 Application | £13.95 |
| 6502 Development Package | £7.50 |
| 6502 Programming the | £16.95 |
| 6502 Reference Guide | £10.95 |
| 68000 Assembly Language | £15.95 |
| 68000 Assembly Language Prog. | £19.95 |
| 68000 Assembly Language Techniques | £24.95 |
| 68000 Machine Code Programming | £13.00 |
| 68000 Microprocessor Handbook | £14.95 |
| 68000 Programming the | £22.95 |
| 68000 User Guide | £8.95 |
| 6809, Programming the | £18.95 |
| Advanced Disc User Guide | £18.95 |
| Advanced Prog. Guide to BBC | £9.95 |
| Adv. Sideways RAM User Guide | £9.95 |
| Advanced User Guide for BBC | £10.95 |
| Amiga Hardware Ref Manual | £23.70 |
| Amiga Machine Lang. Guide | £19.95 |
| ARM Assembly Lang. Prog. Manua | £12 |
| Art of Microcomputer Graphics | £16.95 |
| Assembly Language Prog. for the BBC | £9.95 |
| AY-3-8910 Programmable Sound Generator | £3 |
| Data Manual | £2 |
| BASIC2 - User Guide | £2 |
| Basic ROM User Guide | £11.95 |
| BBC - Advanced Graphics with the | £10.95 |
| BBC - Advanced Programming | £8.95 |
| Techniques for | £8.95 |
| BBC - Mastering Assembly Code | £8.95 |
| BBC Micro & the small Business | £5.75 |
| BBC Micro Basic Sound & Graphics | £7.95 |
| BBC Micro - File Handling On | £7.95 |
| BBC Micro Programs in BASIC | £5.95 |
| BBC Micro ROM Book | £10.95 |
| BBC Micro - within the | £13.95 |
| BBC Master 128 for High Flyer | £10.95 |
| BCPL User Guide | £14 |
| BCPL The Language & its Compiler | £8.50 |
| C Big Red Book of | £7.50 |
| C - A Dabhand Guideto | £14.95 |
| 'C' Introducing | £9.95 |
| C for Programmers | £9.95 |
| C Programming Lang. | £23.95 |
| COMAL - Introduction to | £9.50 |
| Complete FORTH | £6.95 |
| Computer Graphics & CAD fundamentals | £9.95 |
| Deutsch Direkti (Book only) | £5.95 |
| DNFS Instruction Booklet | £2 |
| Disc Drive Projects for Micros | £6.50 |
| DISC FILING SYSTEM (DFS) | |
| Operating Manual for BBC | £6.95 |
| File Handling on BBC Micro | £8.50 |
| FORTH - Advanced | £9.95 |
| FORTH - A Text Reference | £19.10 |
| FORTH - Introduction to | £8.95 |
| FORTH on the BBC Micro | £9.95 |
| FORTH - Starting | £19.10 |
| Hackers Handbook - New | £6.95 |
| Hitch-Hikers Guide to A.I. | £8.95 |
| Interfacing and Robotics | £15.95 |
| Introduction to COMAL | £9.50 |
| Introduction to FORTH | £8.95 |
| Introduction to LOGO | £6.95 |
| Introduction to PASCAL | £17.95 |
| Inside Information, Computers & Corns. | £9.95 |
| ISO-PASCAL Reference Manual | £9.95 |
| LISP 2nd Edition | £15.95 |
| LISP Looking At | £11.95 |
| LISP on the BBC Micro | £7.95 |
| LISP the Language of | |
| Artificial Intelligence | £13.95 |
| Logo on the BBC Micro | £7.50 |
| LOGO - Introduction to | £6.95 |
| Mysteries of DISC DRIVES and DFS | |
| REVEALED | £5.95 |
| Mastering Assembly Code | £8.95 |
| Mastering CP-M | £17.95 |
| Mastering Interpreters & | |
| Compilers | £14.95 |
| Mastering Music | £6.95 |
| Mastering the Disc Drive | £7.95 |
| Master Operating System | £12.95 |
| Master Reference Manual Part 1 | £14.00 |
| Master Reference Manual Part 2 | £14.00 |
| Master Reference Manual - Advanced | £19 |
| Mathematical Prog. in BBC Basic | £7.95 |
| Micro Prolog | £10.00 |

| | |
|--------------------------------------|--------------|
| Microtext for the BBC | £10.00 |
| Microtext Plus Manual | £9.95 |
| Microtext User Guide | £5 |
| PASCAL - Introduction to | £17.95 |
| PASCAL Programming | £9.45 |
| Pick Operating Sys. Practical Guide | £14.95 |
| Practical Disc File Techniques | £5.95 |
| Structured Basic | £7.95 |
| The Epson FX-KAGA PRINTER | |
| Commands REVEALED | £5.95 |
| The Software Business | £5.50 |
| Towers Int. Transistor Selectors | £14.95 |
| Understanding Interword - | |
| A Beginners Guide | £6.50 |
| Using DOS+ on the 1512 | |
| (95% OK for 512 Bd) | £9.95 |
| View 3.0 User Guide | £10 |
| View Guide (View 2.1) | £4.50 |
| Viewsheets & Viewstore Dabhand Guide | £12.95 |
| Mastering View, Viewsheets & | |
| Viewstore | £12.95 |
| VIEW Dabhand Guide | £12.95 |
| Viewsheets User Guide | £10 |
| Viewstore User Guide | £10 |
| Wordprocessing On The BBC Micro | £6.25 |
| Writing Interactive Interpreters | |
| & Compilers | £8.45 |
| Wordwise + A User Guide | £10.95 |
| Z80 Applications | £15.95 |
| Z80 Assembly Language Prog. | £20.95 |
| Z80 Programming the | £19.95 |
| Z80 Reference Guide | £9.95 |
| Z88 Computing | £9.95 |

BOOKS for IBM PC & Compatibles (No VAT on Books)

| | |
|---|--------|
| 1-2-3 For Business 2nd Edition | £18.45 |
| 1-2-3 Command Language | £18.45 |
| 1-2-3 Special Edition (QUE) - Using | £21.95 |
| 8086/8088 Assembly Language Prog. | £11.95 |
| 8086/8088 Programming the | £17.95 |
| Ability - Using | £12.95 |
| Accountancy software in Business - | |
| Using | £12.95 |
| Advance C Tech & Application | £19.95 |
| Advanced Tech. in Turbo Pascal | £19.95 |
| Aldus Pagemaker - Using | £18.45 |
| Amstrad Basic 2 Manuals | £12.95 |
| Amstrad Technical Manuals | £19.50 |
| Amstrad PC Programmers Ref Guide | £15.95 |
| Amstrad PC1512-1640 Step by Step - | |
| Using | £8.50 |
| Art and Desktop Publishing | £18.45 |
| Autocad - using | £18.95 |
| BBC Assembly Ref. Manual - within | £11.95 |
| Business companion on the 1640 | £12.95 |
| CP-M Bible | £16.50 |
| CP-M Handbook with MPM | £9.95 |
| CP-M Plus Handbook | £13.95 |
| CP-M Soul of | £16.50 |
| CP-M The software BUS | £8.95 |
| dBase II & III - Understanding | £7.95 |
| dBase II - Working with | £9.95 |
| dBase III - Mastering | £19.95 |
| dBase III Plus | £12.95 |
| dBase III Plus Handbook 2nd Edition | £19.95 |
| dBase III Plus - tips, tricks and traps | |
| (QUE) | £18.40 |
| dBase III Plus - Quick Ref. Guide | £4.95 |
| dBase III Plus - Quick Prog. Guide | £8.95 |
| DOS Instant Reference (upto 3.3) | £10.95 |
| DOS, Mastering for Versions upto 3.3 | £19.95 |
| DOS Plus Manual/Amstrad PC | £17.00 |
| DOS Plus - Mastering | £12.50 |
| Excel IBM Version - Using the | £17.95 |
| Hard Disk Manage IBM PC XT AT | £17.35 |
| Hard Disc - Managing your | £18.45 |
| IBM Mac Connection | £17.35 |
| IBM PC & Macintosh Networking | £17.95 |
| IBM PS/2 Handbook | £17.95 |
| IBM PC AT - Inside the | £20.95 |
| Local Area Networks 2nd Generation | £19.95 |
| Lotus 1-2-3 Desktop Companion Soft/B | £24.95 |
| Lotus 1-2-3 - Illustrated | £18.45 |
| Laserprintit | £15.95 |
| Managing your Hard Disk | £18.45 |
| Mastering 1-2-3 2nd Edition | £18.95 |
| Microcomputer CAD Manual | £25.95 |

| | |
|--------------------------------------|--------|
| Microsoft Windows - Illustrated | £18.45 |
| MS-DOS - ABC on | 17.95 |
| MS-DOS Advanced Programming | £19.95 |
| MS-DOS Advances (Microsoft) | £19.95 |
| MS-DOS Handbook 3rd Edition | £18.95 |
| MS-DOS Instant Reference Guide | £10.95 |
| MS-DOS Illustrated | £18.45 |
| MS/PC DOS 3.3 - Illustrated | £18.95 |
| MS-DOS Mastering - Tricks of | £22.50 |
| MS-DOS Performance Programming | |
| Under | £19.95 |
| MS-DOS Quick Prog Ref Guide | £8.95 |
| MS-DOS Quick Reference Guide | £3.95 |
| MS-DOS - Running 3rd edition | £21.95 |
| MS-DOS - Supercharging | £17.95 |
| MS-DOS Users Guide 2nd Edition | £16.95 |
| MS-DOS - Using | £9.50 |
| Operating the IBM PC Network | £18.45 |
| Pagemaker - Desktop Publishing | £15.95 |
| Pagemaker IBM PC - Mastering | £18.45 |
| Pagemaker - Illustrated | £18.45 |
| Quattro - Mastering | £21.95 |
| Smart - Using | £21.45 |
| Smart - tips, tricks and traps (QUE) | £22.45 |
| SuperCalc 4 | £19.95 |
| SuperCalc 4 - Using | £17.45 |
| Symphony 3rd Edition - Mastering | £22.95 |
| Turbo Pascal Complete 2nd Ed. | £21.45 |
| Turbo Pascal Library | £14.95 |
| Using 1-2-3 2nd Edition | £21.95 |
| Using DOS+ on the 1512 | |
| (95% OK for 512 Ed) | £9.95 |
| Using Microsoft WORD 2nd Edition | £18.45 |
| Using PC-DOS 2nd Edition Ver. 3.3 | £20.45 |
| Using Pagemaker on the IBM PC | £22.45 |
| Using SuperCalc 4 | £17.45 |
| Ventura - Mastering | £21.95 |
| Ventura Publishing - Instant | £34.75 |
| Ventura Tips + Tricks | £18.95 |
| Word Perfect Desktop Companion | £25.95 |
| Wordperfect - Illustrated | £18.45 |
| Wordperfect 3rd Ed - Using | £18.45 |
| Wordperfect Made Easy | £15.95 |
| Wordstar & CP/M made easy | £9.95 |
| WordStar Release 4 - Mastering | £17.95 |
| WordStar 1512/1640 - Using | £9.50 |
| WordStar User's Ref. manual | £12.50 |
| Wordstar - Quick program Ref. Guide | £8.95 |
| WordStar 4.0 - Using | £17.45 |
| Xerox Ventura - Desktop Publishing | £14.50 |
| Xerox Ventura Publishing - Inside | £18.45 |

NEW

The Advanced Reference Manual for the BBC Master

At last Acorn's long awaited Advance Reference Manual for the BBC Master Series of Microcomputers has now been published. Watford Electronics' own authors have edited and added missing sections to the original script and produced a very high quality publication.

It features information about:

- Memory Organisation
- Slow data bus
- Detailed circuit description
- Keyboard controller
- Screen display
- User port
- Serial Processor
- Peripheral bus controller
- 1 Mhz Bus
- Machine operating System
- Second processors - Internal, Z80 and 80186
- Disc Filing Systems
- ANFS
- Terminal Emulator & Editor
- View internal format
- Detailed differences between Model B, B+, Master 128K and Compact
- Comprehensive appendix on 65C12 instruction set

At the rear of the manual there are pull out circuit diagrams for the Master 128K. A worth-while addition to any Master owner's library.

All this for just £19 (NO VAT)

THE COMPLETE BBC COMPUTER USER HANDBOOK

"Why has no-one written a book like this before? It's long overdue".

If you own a BBC-B, BBC B+, Electron, Master 128, Master Compact or Archimedes then this book is for you. It shows you how to get the most from your computer, and how to make the computer work for you. Although some sections are machine specific, most of the information, programs, hints and good solid experience are for the whole range of BBC machines. The general style and level means that both beginner and expert will feel satisfied with the quality and quantity of the material.

GENERAL – Uses and abuses of computers.

HARDWARE – How to design your own work station. Hardware additions (disc drives, ROMs, printers, 2nd processors, etc). DIY alterations.

HARDWARE RUNNING BBC-BASIC – All BBC machines are described with their differences. Compatibility between the various BBC machines. Networks. The Archimedes and its advantages.

GETTING ORGANISED – so that you keep track of your programs and control of your software. Setting up for easier programming sessions.

NEAT PROGRAMMING – Good style. Writing structured programs. Getting the best from BBC-BASIC, Graphics and screen displays. Speeding up programs. Saving space.

GENERAL PROGRAMMING TIPS AND HINTS – with a multitude of examples (eg input vetting, dealing with dates, blanking out function key messages, error trapping, disabling ESCAPE and BREAK, use of EOR with colour, etc).

DEBUGGING – Specific errors and how to handle them. How to test programs fully.

STANDARD PROGRAMS – Assessing word-processors, spread-sheets, databases, graphics packages, communications etc. How to customise them to your own requirements.

COMPUTERS AT HOME AND IN THE OFFICE – Introducing the computer to the office. Program protection. Computers and the law. Communications. Selling your own programs. 28 FULL CHAPTERS, elegantly written and extensively indexed. To dip into, consult, or read from cover to cover, again... and again... and again...

Only: **£14.95** (Book No VAT)

Watford Electronics are the main Approved Stockist of ACORN SPARES and Acorn ECONET Referral Centre

Servisol Foam Cleaner

This 415ml, king size multi-purpose foam cleaner spray is ideal for cleaning the Keyboard, Monitor, Disc Drive and your computer furniture surfaces. Simply spray on the surface to clean and wipe off with a clean cloth.

£2.50

Antistatic Aerosol Spray

Ideal for cleaning and preventing static build-up on TV/Monitor Screens.

£2.50

Aerosol Dust Spray

Aerosol Dust Spray
This simple to use aerosol spray is ideal for removing Dust and Dirt deposits from the Keyboards and similar inaccessible places.

£3



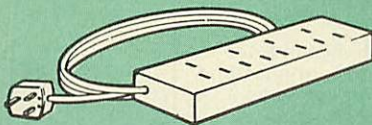
**CREDIT CARD 24 HOUR
Ansaphone Hot Lines
(0923) 50234 or 33383**

SURGE PROTECTOR Plug

Fitted in place of your normal mains plug, this device protects your equipment against mains surges. Nearby lightning strikes, thermostats switching and many other sources which put high voltage transient spikes on to the mains. This can lead to data corruption in memory and on disc and can result in spuriously crashing machines. A must for every computer user.

Protection for only **£7.50**

4 WAY MAINS DISTRIBUTION SOCKET



4 way top quality mains trailing sockets. Supplied wired up with mains plug ready for use. Can be screwed to floor or wall if required. Very useful for tidying up all the mains leads from your peripherals.

£7.95 (carr £11.50)

SPIKES CLEANER UNIT

A 4 way mains distribution unit as above with a built-in Surge Arrester, providing protection for your complete computer system

£13.00 (carr. £1.50)

ROM EXTRACTION TOOL

This extremely useful tool allows you trouble free chip insertion and removal from your computer by distributing the removal force over the whole body of any 24 or 28 pin chip.

£2

Replacement FLEXIBLE 17 way Keyboard Connector £3

28pin DIL HEADER PLUG

SOLDER type **£1.50**; IDC CRIMP type **£1.95**

8 WAY DIP SWITCH

Increase the speed of your Disc Drives by soldering this switch to your BBC B or B+ Keyboard.

Only **£1.00**

28 pin ZIF SOCKET (Textool) **£6.95**

Watford DATA DUCK

Convert two single Disc Drives into one Dual Drive with this simple external unit (Suitable for Disc Drives with PSU. For Disc Drives without PSU, you will also require Watford Power Duck, see below).

£14

Watford POWER DUCK **£8**

CONNECTING LEADS

(All ready made and tested)

CASSETTE LEADS 7 pin DIN Plug
to 5 pin DIN Plug + 1 Jack Plug **£2.00**
to 3 pin DIN Plug + 1 Jack Plug **£2.00**
to 7 pin DIN Plug **£2.50**
to 3 Jack Plugs **£2.00**
6 pin DIN to 6 pin DIN Plug (RGB) **£2.50**

DISC DRIVE POWER LEADS

Supply from BBC power supply to standard Disc Drive connector.

Single **£3.00** Dual **£3.75**

DISC DRIVE INTERFACE LEADS

BBC to Disc Drives Ribbon Cable
Single **£4** Twin **£6**

Miscellaneous Connectors

| | Plugs | Sockets |
|-----------------------|-------|---------|
| RGB (6 PIN DIN) | 30p | 45p |
| RS423 (5 pin Domino) | 40p | 50p |
| Cassette (7 pin DIN) | 25p | 65p |
| ECONET (5 pin DIN) | 20p | 30p |
| Paddles (15 pin 'D') | 80p | 200p |
| Disc Drive Plug 4 way | 75p | — |
| 6 way Power Connector | 80p | 95p |

SPARES for BBC Micro

| | | | |
|-----------------|-----|----------------|-------|
| BBC Keyboard | £36 | Speaker | £2 |
| Master Keyboard | £62 | Keyswitch | £1.50 |
| UHF Modulator | £4 | 16MHz Crystal | £4 |
| Speaker Grill | £1 | 32.768MHz Xtal | £1.00 |
| Power Supply | £56 | Master PSU | £59 |
| BBC Casing | £20 | | |

CHIP SHOP

| | | | |
|--------------------|--------|--------------------------|------|
| DS3691 | £4.50 | ASSORTED ROMS | |
| DS88LS120 | £5.25 | ACORN ADFS | £25 |
| LM324 | £0.45 | ACORN BASIC 2 plus | |
| SN76489 | £5.50 | User Guide | £22 |
| SAA5050 | £8.75 | Acorn BCPL | £42 |
| UPD7002 | £6.00 | Acorn COMAL | £38 |
| WD1770 | £12.00 | ACORN DNFS | £17 |
| 2764-250nS | £3.50 | Acorn FORTH | £32 |
| 27128-250nS (12V5) | £3.25 | Acorn Graphics | £25 |
| 27128-250nS (21V) | £5.25 | Acornsoft C | £52 |
| 27256-15 | £5.00 | Acorn LISP | £19 |
| 27512 | £10.50 | Acorn LOGO | £49 |
| 27C101G (1 Meg) | £17.50 | Acorn OS B+ | £25 |
| 4013 | 60p | Acorn OS 1.2 | £14 |
| 4020 | £0.90 | Basic Editor | £24 |
| 4164-15 | £3.25 | Beebfont | £25 |
| 4464-12 | £8.95 | Beebmon | £22 |
| 4464-15 | £8.25 | BROM Plus | £32 |
| 4816 RAM | £2.00 | Buffer & Backup | £20 |
| 41256-15 | £8.25 | Communicator | £49 |
| 41256-12 | £9.75 | Commstar II | £28 |
| 6264LP-8K | £8.50 | Graphics Extension Rom | |
| 6502A CPU | £4.50 | GXR-B | £21 |
| 65C02 3M | £9.75 | GXR-B+ | £22 |
| 65C12 | £9.00 | Help II | £27 |
| 6512A | £10.00 | ISO Pascal | £51 |
| 6522 | £3.40 | ISO-Pascal Stand | |
| 6522A | £4.50 | Alone Generator | £30 |
| 62256ALS-15 | £12.50 | ICON Master | £28 |
| 6818 | £4.00 | Logotron LOGO | £45 |
| 6845SP | £6.00 | Master OS ROM | £38 |
| 68B50 | £2.95 | Master Termlator | £32 |
| 68B54 | £7.50 | Micro Prolog | £62 |
| 7438 | 40p | Microtext Disc | £46 |
| 74LS00 | 25p | Microtext Rom | £199 |
| 74LS04 | 25p | Mini Office II ROM | £43 |
| 74LS10 | 25p | MUROM | £21 |
| 74LS123 | 80p | NLO DESIGNER | £25 |
| 74LS163 | 70p | ROMIT | £29 |
| 74LS244 | 80p | Serial ULA | £13 |
| 74LS245 | £1.00 | TED | £35 |
| 74ALS245 | £2.75 | Termlator B, B+ | £25 |
| 74LS373 | £1.00 | Termlator Master | £32 |
| 74LS393 | £1.00 | Toolkit Plus B, B+ | £31 |
| 75453 | 70p | Video ULA | £14 |
| 75159 | £2.00 | ULTRACALC II | £26 |
| 8271 | £39 | 1Mb OS ROM | £39 |
| 9637 | £2.00 | | |
| ICL7673PA | £2.00 | | |

NEW

BBC PCB DESIGNER

A PCB Designer package for the BBC Micro that eclipses some industry standard CAD Software.

Input for the design may be manual or Auto mode.

Some of the PCB Designer's features are:

- Over 120 library pad sizes/shapes
- Four colour adjustable palette
- Zoom range 2:1 to 1:4
- Highlighting of specific tracks
- Normal and surface mounted components
- Rapid screen review
- Menu driven
- Variable gridlock
- Switchable measurement grid
- Pre-select pan/scroll facility
- Large 24" x 24" Board size
- Copy route facility
- Connectivity held at all times
- Ratsnesting of part connections
- Auto-placement of text references
- Text linked to parts
- Automatic placement of vias
- Printer and plotter outputs provided
- Comprehensive manual

Introductory Offer: £59

(Please write in for further technical details)

Continued

If you thought £150 didn't buy much of a modem you haven't heard about the aries 1200

NEW

Aries 1200 MODEM

APPROVED for connection to telecommunications systems specified in the instructions for use subject to the conditions set out in them

Up till now buying a modem was a compromise between price and performance, but the new Aries 1200 offers performance and features not found on modems costing two or three times as much. Look at the features offered by the Aries 1200, features which you wouldn't expect from a modem at this price – and some which you would be lucky to find on a modem at any price.

- Operates in V21 (300/300), V23 (1200/75 and 75/1200) and proprietary V23 1200 mode.
- Connect it to any type of computer or terminal via the 25 way serial D connector or the BBC standard 5 pin Domino socket.
- A built in phone socket means your phone plugs straight through.
- A reset switch so the hardware makes it easy to restart – even when your software doesn't.
- Industry standard Hayes (C) compatibility means that this is one of the easiest modems to use. It can automatically work out the speed your computer is working at, and even the speed and protocol of the modem at the other end.
- Auto Call mode can dial using tone or pulse (the modem works that out too), and when it connects it will automatically determine the speed of the answering modem.
- Auto answer mode means the modem can be left unattended to answer calls from other modems, and of course it automatically works out the speed and protocol of the calling modem.
- The built in speaker and front panel LED's mean that you always know what the modem is doing.

... Features at any price.

- Proprietary V23 mode mean that two Aries 1200's can communicate at 1200/1200 and in this situation you can take advantage of the built in data compaction which reduces the volume of text you send by 30%.
- Built in scrambler means that data transferred between two Aries modems is automatically encrypted. The encryption code can be user defined for a totally private email system.
- User defined control commands means that the Aries can even be used from a dumb terminal or with non standard software.
- Front panel light include indicators for Power, Auto Answer Mode, Transmit, Receive, On line, Terminal ready and Carrier Detect. There's even an indicator to show the quality of the phone line.
- Internal watch-dog monitors the modems activity and in the event of a power failure or computer crash it automatically resets the modem. The Aries modem can never hold open your phone line or lock up your computer.
- Built in printer port allows the Aries to direct incoming data directly to a printer, text can be tagged so that it is selectively sent either to the printer or the computer.
- All modem setting are stored in solid state non volatile memory – no battery to go flat and hang crash the system.

Launch Offer Only: £149

Hayes Compatible BBC Comms Software ROM & Manual £25

WATFORD CUT PRICES NOT PERFORMANCE

Prices subject to change without notice and available on request. ALL OFFERS subject to availability
Mail Order and RETAIL SHOP Trade and Export inquiries welcome
Government and Educational Establishments' OFFICIAL ORDERS Accepted
Shop Hours 9.00am to 6.00pm Monday to Saturday Thursdays 9am to 8pm (Free Customer's Car Park)

VAT UK customers please add 15% VAT to cost incl Carriage. CARRIAGE Unless stated otherwise, minimum £1 on all orders. £3 on Larger items. On bulkier items, £7 Securicor charge applies (UK mainland only). Overseas orders, carriage is charged at cost

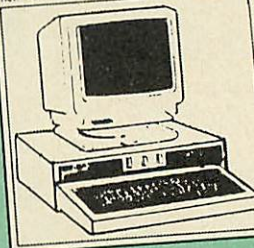
ORDER VIA
microlink
72-MAG030

WAPPING EDITOR



"MIGHTIER THAN THE QUILL"

it, sed diam nonummy... delectus au aut prefer... quid est cur ve... pauli ante cum mem... test tier ad augendas... tamen in busdam ne... pular reliquard cupid... Nam liber tempor... ne ad quod maxim pla...



The WAPPING EDITOR

Watford Electronics bring professional quality Desktop Publishing to the Beeb. The Wapping Editor is a totally self contained mouse-driven desktop publishing package designed to run on the BBC B, B+ and Master computers. The massive 64K Rom contains ALL the software you need to do your own publishing. It 'Brings the Freedom of Press' to your fingertip. The software has a word processor, a graphics package, a page layout section and a font designer. Although very sophisticated, Wapping Editor is simplicity itself to use. Anyone already familiar with Quest Paint will immediately feel at home.

GRAPHICS PACKAGE

Imagine Quest Paint re-written to take advantage of the high resolution of Mode 0, well this is it. The Wapping Editor could well be worth buying for this facility alone. This must surely be the graphics.

WORD PROCESSOR

This section is a fully functional word processor specially tailored to suit the Desktop Publishing environment. Gone are all the unnecessary and cumbersome text formatting commands – these are dealt with in the 'Page-Layout' section. The features of this word processor include wordwrap, wordcount, insert/overwrite, move block, copy block, delete block, search and replace, browse, etc, many of these features being mouse controlled. Text input can of course be taken from existing word processor files like Wordwise, View, etc, but it is not necessary to have a separate word processor in order to use this package.

PAGE-LAYOUT SECTION

Page Layout becomes easy using these mouse-driven routines. The user simply 'pulls' a rectangle onto the page and states which text document or graphic is required to fill the space – it's as simple as that! Text can be automatically printed in a pre-set number of columns, left justified and/or right justified, or centered. Several different typefaces can be held in memory at one time. Graphics may be stretched, squashed or cropped to fit any size rectangle. Graphics input can be from the software provided in the package or, using the 'mode convert', from any graphics mode screen.

THE FONT EDITOR

This is an enhanced version of the font editor contained in the Con-Quest ROM and allows the editing of ALL 95 characters. As well as being able to design your own typefaces, fonts from other DTP packages or from Quest Pain may be loaded into the editor and converted for use with the Wapping Editor. This sophisticated editor has numerous functions including slide, flip, invert and rotate individual characters or the whole font. Individual characters can be mirrored or copied and a mask feature allows you to superimpose two characters. Lines and columns can be inserted or deleted allowing the character to be stretched or squashed. This font editor will also allow 'font' and 'brush' files to be designed for use with Quest Paint. This package is the latest in the line of integrated professional quality mouse-driven software from Watford Electronics, the company that adds power to Beeb.

Launch Offer: £69

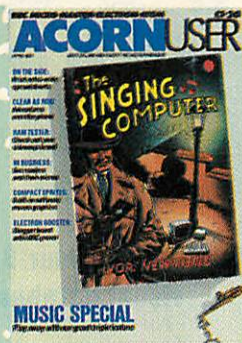
Specifications of all products are given in good faith but is subject to change without notice. Some items vary in their availability. Please ring for latest delivery situation.

Watford Electronics

JESSA HOUSE, 250 Lower High Street,
WATFORD WD1 2AN, ENGLAND
Telephone: (0923) 37774; Telex: 8956095;
FAX: 01 950 8989

OFFERS

CHRISTMAS SUBSCRIPTIONS



Beat the price rise — subscribe today

The price of an annual Acorn User subscription is going up to £18.95 from November 30 1988, so treat yourself this Christmas and subscribe to Acorn User. Not only will you beat the price rise but you'll receive two free issues.

For just £17.50, we will send you 14 issues of Acorn User, packed with news, reviews, and feature articles. So make sure you, and your

friends, don't miss out on anything that's happening in the world of Acorn computers by subscribing now.

To start your subscription to Acorn User, and qualify for your free issues, simply complete the coupon below and return it before January 31 1989. This offer is only available to UK readers.

Please start my subscription to Acorn User with the _____ issue
NAME _____
ADDRESS _____

_____ POSTCODE _____ AU01

I would like to give an Acorn User subscription as a Christmas present starting with the _____ issue to:

NAME _____
ADDRESS _____

_____ POSTCODE _____ AU01

☐ Please send a gift card.

I enclose my cheque/postal order for £17.50 made payable to Redwood Publishing.

Please charge my Access/Barclaycard

ACC NO

EXPIRY DATE

SIGNED _____ DATE _____

UK ONLY

Send this form with your remittance to Caroline Gregory, Acorn User Subscriptions, Redwood Publishing Ltd, Marlborough Road, Aldbourne, Wiltshire SN8 2DD.

BUTTONING UP A NEW CONCEPT

Want to keep your BBC micro, but also want a Hypercard-like visual database? User Card is just what you need

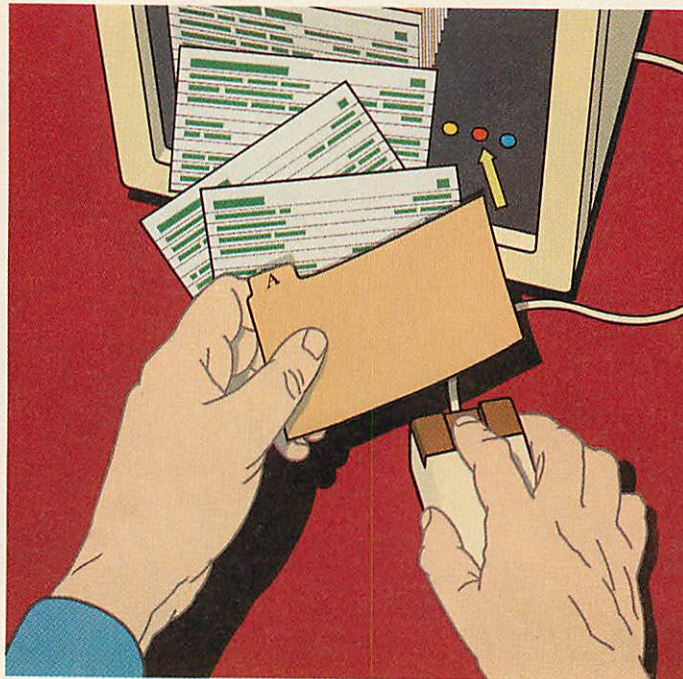
Joe Telford

I suppose it happens to all of us at sometime or other. Changing jobs, I mean. I've watched over the years as *Acorn User* staff have come and gone, and although I only contribute to the massive workload for the real *Acorn User* team, I've just come to understand the tremendous upheaval that changing jobs entails.

All sorts of new relationships must be made, structures for working established and mechanisms for doing the job as part of a new team invoked. You'd think that the sensible application of a computer could only help matters. Far from it. In my previous post, I used BBC micros which I myself had recommended, and more recently, their brother Arcs. These machines covered much of what we needed to do, and could be used easily by most of the staff.

Now, however, my needs are very different. I still need to use BBC micros for some of my work, particularly in the area of control and interfacing (so look out for some really exciting projects!), but there are also areas where my team needs to deliver a high-quality paper-based end product.

Then there are areas where we need to communicate among ourselves, and share applications, activities and files, and then areas where a totally integrated environment encompassing all the necessary applications is essential. If we take into account the fact that not all of us are computer experts, then we have a major



problem in deciding which system to use for admin work.

This is the situation that I'm just exploring, and I've spent the past few months looking at potential systems. Finally I've settled on the Apple Macintosh SE as a networkable system that fits most of our needs at work, and by the time you read this the system will be up and running.

I must admit that I would have liked to have bought Arcs, but even now they do not deliver the range of applications that we need to access.

Perhaps with the imminent release of RISC OS, software writers will at last be encouraged to use a compatible approach which will enable integration across a wide range of products: this is certainly the intention of *Arc Edit*, *Arc Draw* and

Arc Paint on the RISC OS Welcome disc.

When the world first heard of Windows, Icons, Menus and Pointers (Wimps) there was an immediate move towards programs incorporating these on almost every micro. But not every micro was capable of supporting the complete integration of such applications, which were often quite large consumers of memory. In addition, every software house attempted different implementations, based on what individual programmers saw as being most appropriate to their application. Rather than create a uniform means of communicating with a computer, avoiding the need to relearn for

every new package, the learning environment of many computers is so un-intuitive that a manual is an essential part of learning how to use every application.

PAB is a new word which needs to be applied to the Wimp environment. The PAB is a Pointer which Acts on a Button. In other words, it is most important to communicate simply with an application, and the simplest way is to have a series of buttons available on screen, which are pressed by pointing at one and then clicking a mouse or the Return key. A pressed button carries out a particular action.

This sort of human-machine interface allows us to work with very simple tools: a mouse or the cursor keys, the screen pointer and the Return key or one button on the mouse.

It all means that your attention can be devoted to the application, and not to considering what button to press. In a mouse-based application, you would simply point and press to start an activity.

Contrary to popular opinion, the optimum number of buttons on a mouse, using the PAB philosophy, is just one. You might think that a two-button mouse would allow you to work twice as fast as a one-button mouse, but that is not really so. Because each choice of button to be pressed makes you think about an operational technique as well as the aim of your activity, the amount of thinking to be done is greater. Consequently, you work somewhat slower than with a single-buttoned mouse.

The standard BBC mouse with three buttons is even worse, because you now have to make three choices at each point resulting in a further reduction in working speed and an increase in button presses. The logical extension of the three-button mouse is the 72-button mouse – more usually called a keyboard. We all know how quickly this allows us to work. The best tip I can give is to tape off the spare keys, and use applications which give you all the information you need on screen, in menus or on buttons. Programmers shouldn't differentiate between mouse buttons.

This might be anathema to those of us who are deeply attached to one particular package, such as AMX *SuperArt*, and who have learned to use all the mouse keys and special sequences from the keyboard. My feeling is that you should always work at whatever level you are confident, but never assume that the effort put into learning one package must be repeated when learning another. As more powerful computers like the Arc arrive, the emphasis should be on ease of use, and PAB may be a way forward.

A year or so ago, Apple came up with *Hypercard*, now given away freely with its Mac. Explaining *Hypercard* is about as easy as explaining Logo.

At its simplest, *Hypercard* is a means of relating large amounts of separate information in a visual form. It is also a particularly good example of the PAB philosophy, and well worth exploring. Of course one of the problems of being an Acorn user is that large applications are often beyond our ability to duplicate in our 32k RAM space. *Hypercard* can just survive on a one-megabyte hard disc machine. However, there are generic

elements of *Hypercard* which are quite simple, and I've spent some time developing a demonstration package to run on most BBC micros.

As with any new concept, you have to learn a new vocabulary. The main new word here is the 'stack'. A stack is simply a pile of database cards about a particular topic. The card itself is a container for information, just like an index card in a filing system. Each card contains different types of information, as shown in figure 1. Each card carries not only information about its own shape and size but also about the text for different areas, plus fields for further information. There can also be picture information and menus for special effects but they aren't implemented in our own version – *User Card*. There are also buttons on the card to

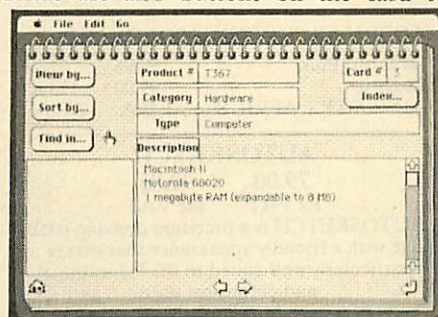


Figure 1. *Hypercard*: a container for information

cause specific actions. The user should be able to change the information on any particular card, but because we are working with a specific database in our demonstration version, the ability to do this is switched off.

Another important word is background. This refers to the base layout of each card, and in our version this is set by having each card refer to a particular background as part of its information. The background can include text, fields and buttons. Fields are the areas on a card where text can be entered; buttons are those which can cause particular actions to occur.

This version of *User Card* can handle a range of about 15 button actions, and later versions will allow you to predefine buttons and their actions. This is tantamount to programming, but without any of the learning associated with languages like Basic and Logo. In fact, we call the activity of making a set of cards 'authoring'.

The Enos stack is the demonstration stack accompanying this article. You can find it on the yellow pages as two programs. The first is a stack generator: a program that builds the stack on disc

which should be typed in and saved as 'Makestk'. The second program reads the cards and manipulates the stack. This package is quite flexible and will work with any stack, although it does not yet create any new cards. Type in this program and save it as 'Dealer'.

Both programs are quite long, and there may be some benefit in buying the monthly disc.

The Enos stack covers a selection of E numbers and food additives, and so is of interest to people from health-conscious adults to students of Home Economics studying for GCSEs. The information contained on each card comes from a range of sources, particularly the leaflets available from health food chains like Holland & Barrett. Each card carries the following information:


- The E number, for example E100
- Whether the E number has caused reactions in hyperactive children
- The name of the additive
- Which foods it is typically found in
- What the additive is used for
- Any known dangers to health
- Any comments you wish to include which don't fit elsewhere

Once the programs are safe on disc, format a new disc to either 40 or 80 tracks and have it handy. Load the Makestk program from its disc into the BBC micro, and then place the blank disc in drive 0. Run the program and wait until it finishes and the disc drive light goes out. Now copy the Dealer program from your disc onto the disc with the newly created stack, and then create a !Boot file:

```
*BUILD !BOOT
0001 *BASIC
0002 CHAIN "Dealer"
0003
Escape
*OPT 4 3
```

At this point, you have created a disc which will operate as a stand-alone stack of up to 29 cards – the limit is the number of files on a DFS disc less !Boot and Dealer. To increase stack size you will need either to adopt a new method of storing card information, or to change to a hierarchical filing system. In common with the real versions of similar products, ADFS on a Winchester drive really is the best bet for a more rigorous implementation of this package.

Once the disc is set up, you can start to get into the stack. To access the E numbers stack, simply press Shift and Break, and the program Dealer will load.



MICROMAN Computers

PASTURE LANE FARM,
PASTURE LANE, RAINFORD,
ST. HELENS, MERSEYSIDE, WA11 8PU

PHONE 074488 3667

SHOWROOM

SHOWROOM OPENING
9-6 MONDAY TO FRIDAY
9-1 SATURDAY



MAIL ORDER

PHONE 074488 5242

We accept both Access and Visa credit cards. Simply telephone your order, giving card number, expiry date, name and address, or send your order with cheque or postal order to the address opposite.

DELIVERY CHARGES INCLUDING VAT

Computers/Printers/Drives:
Next day £8.00, Trackback £4.00
Small Items: £1.00

ACORN PREMIER DEALER : ECONET : SERVICE CENTRE

Archimedes

| ARCHIMEDES 300 | Ex VAT | Inc VAT |
|------------------------|---------|---------|
| Archimedes 310 Base | 835.00 | 960.25 |
| Archimedes 310 Mono | 895.00 | 1029.25 |
| Archimedes 310 Colour | 1055.00 | 1213.25 |
| Archimedes 310M Base | 895.00 | 1029.25 |
| Archimedes 310M Mono | 955.00 | 1098.25 |
| Archimedes 310M Colour | 1115.00 | 1282.25 |

ARCHIMEDES 400

| | | |
|-----------------------|---------|---------|
| Archimedes 440 Base | 2529.00 | 2908.35 |
| Archimedes 440 Mono | 2589.00 | 2977.35 |
| Archimedes 440 Colour | 2749.00 | 3161.35 |

0% FINANCE

For a limited period Microman are able to offer 0% finance on Archimedes Computers please phone or call in for further details.

ARCHIMEDES SPECIAL OFFERS

We have a range of special packs available to suit individual requirements, these include a range of FREE OFFERS please talk to our sales staff for specific details.
(These offers do not apply to 0% Finance)

MULTISYNC MONITORS

| | | |
|-----------------|--------|--------|
| NEC Multisync 2 | 520.87 | 599.00 |
| Taxan 770 Plus | 599.00 | 688.85 |

ARCHIMEDES PODULES/EXPANSION

| | | |
|--------------------------|-------|-------|
| Acorn Backplane Podule | 39.00 | 44.85 |
| Acorn ROM Card | 59.00 | 67.85 |
| Acorn I/O Podule | 85.00 | 97.75 |
| Acorn MIDI Add-on to I/O | 39.00 | 44.85 |
| Acorn MIDI Card | 69.00 | 79.35 |
| 5.25/3.5 Disc Interface | 25.00 | 28.75 |
| Ac/BBC Serial Link | 25.00 | 28.75 |
| CC ROM Podule | 49.00 | 56.35 |
| CC ROM Podule + BB | 59.00 | 67.85 |

ARCHIMEDES UPGRADES

| | | |
|-------------------------|--------|--------|
| RISC OS - APRIL 89 | 29.00 | 33.35 |
| PC Emulator | 99.00 | 113.85 |
| 0.5 MB RAM (305 only) * | 149.00 | 171.35 |
| Floppy Disc Drive * | 115.00 | 132.25 |
| 20MB Hard Disc * | 499.00 | 573.85 |

(Requires Backplane Podule)

* Dealer Upgrade Only

ARCHIMEDES SOUND SOFTWARE

| | | |
|-------------------------|--------|--------|
| EMR Studio 24 Plus | 86.09 | 99.00 |
| EMR Sound Synth | 43.44 | 49.95 |
| EMR Creations Disk | 17.35 | 19.95 |
| Armadillo Sound Sampler | 110.00 | 126.50 |
| Sound Sampler + FFT | 140.00 | 161.00 |
| FFT Software | 40.00 | 46.00 |

LANGUAGES

| | Ex VAT | Inc VAT |
|----------------------|--------|---------|
| Ansi C | 99.00 | 113.85 |
| ISO-Pascal | 99.00 | 113.85 |
| FORTAN 77 | 99.00 | 113.85 |
| Software Dev Toolbox | 199.00 | 228.85 |
| Assembler | 199.00 | 228.85 |
| Prolog X | 199.00 | 228.85 |
| LISP | 199.00 | 228.85 |
| Twin | 29.00 | 33.35 |

ACORN ARCHIMEDES SOFTWARE

| | | |
|----------------------|--------|--------|
| 1st Word Plus | 79.95 | 91.94 |
| Logistix | 99.00 | 113.85 |
| Acorn DTP - APRIL 89 | T.B.A. | T.B.A. |

AUTOSKETCH

79.00 90.85

Ex VAT Inc VAT

AUTOSKETCH is a precision drawing package with a friendly appearance that makes it particularly well-suited to the Educational and enthusiast user.

ROLAND A3 X-Y PLOTTERS

| | | |
|--|--------|---------|
| Roland DXY880A A3 | 595.00 | 684.25 |
| Roland DXY980A A3 | 950.00 | 1092.50 |
| Roland Main Dealer: Details on application | | |

CLARES SOFTWARE

| | | |
|-------------------|--------|--------|
| Artisan | 34.74 | 39.95 |
| Artisan Utilities | 17.35 | 19.95 |
| Pro-Artisan | 147.78 | 169.95 |
| Render Bender | 69.52 | 79.95 |

STAR LC10 COLOUR

The ideal choice of printer for the Archimedes and Clares Artisan Software.

229.00 263.35

Ex VAT Inc VAT

| | | |
|----------------|-------|-------|
| AlphaBase | 43.44 | 49.95 |
| Graphic Writer | 26.04 | 29.95 |
| Toolkit Module | 34.74 | 39.95 |

MINERVA ARCHIMEDES SOFTWARE

| | | |
|---------------------------|-------|-------|
| Minerva Deltabase | 26.04 | 29.95 |
| Minerva System Delta Plus | 60.83 | 69.95 |
| Minerva Gamma Plot | 60.83 | 69.95 |

MISC ARCHIMEDES SOFTWARE

| | | |
|--------------|-------|--------|
| Flying Start | 69.95 | 80.44 |
| U Connect | 52.13 | 59.95 |
| Signwriter | 43.44 | 49.95 |
| Pipedream | 99.00 | 113.85 |

Z88 'ALL IN ONE PACK'

Z88 COMPUTER
128K RAM PACK
CARRYING CASE
SET OF BATTERIES
PLUS FREE Z88 BBC LINK
299.00 343.85
Ex VAT Inc VAT

Z88 COMPUTER

| | Ex VAT | Inc VAT |
|-----------------|--------|---------|
| Z88 Computer | 239.00 | 274.85 |
| Mains Adapter | 8.65 | 9.95 |
| 128K RAM Pack | 43.44 | 49.95 |
| 512K RAM Pack | 173.04 | 199.00 |
| 128k EPROM Pack | 43.44 | 49.95 |
| Z88 PC Link II | 30.39 | 34.95 |
| Z88 BBC Link | 21.70 | 24.95 |

PANASONIC KXP 1081

145.00 166.75

Ex VAT Inc VAT

STAR LC-10

9pin, Multi-Font NLQ Dot Matrix

189.00 217.35

Ex VAT Inc VAT

STAR LC24-10

24pin, Full Featured LQ Dot Matrix

329.00 378.35

Ex VAT Inc VAT

STAR LASER PRINTER 8

1MB MEMORY AS STANDARD
HP LaserJet Plus Emulation
FREE ON-SITE SERVICE CONTRACT

1449.00 1666.35

Ex VAT Inc VAT

BBC MASTER SERIES

| | | |
|---------------------|--------|--------|
| Master 128 | 379.00 | 435.85 |
| Master Turbo Module | 120.00 | 138.00 |
| IEEE 488 Interface | 283.91 | 326.50 |

SPECIAL MASTER PACK MASTER 128 + 5.25" DISC DRIVE

421.74 485.00

Ex VAT Inc VAT

BBC B/B + UPGRADES

| | | |
|---------------------------|-------|-------|
| Acorn 1770 Disc Interface | 49.00 | 56.35 |
| Acorn ADFS ROM | 26.08 | 29.99 |

UNBEATABLE DISC DRIVE OFFER

Opus 5.25" 400K 40/80T
(640K ADFS)

Full 12 months Warranty

65.00 74.75

Ex VAT Inc VAT

PHILIPS MONITORS

| | | |
|--------------------|--------|--------|
| Philips CM8833 | 239.00 | 274.85 |
| Philips Green 7502 | 73.00 | 83.95 |

For full ARCHIMEDES, BBC and PC price list please phone.

GOVERNMENT, NHS AND EDUCATIONAL ORDERS ACCEPTED

There is then a brief pause while it installs a small piece of machine code (which dumps cards to an Epson printer), and soon a window appears which prompts for the name of the stack.

Simply do as requested. The stack is called Enos, so just type that in and press *Return*. If you want to look at the disc, for example if you have created a new stack and you want to see if it is present on a particular disc, then instead of entering any name, just press *Return* and the disc will be catalogued. A window at the top of the screen tells you to press *Space* to return to the main program – once you've read the catalogue, do this.

Once the stack name has been entered, the program looks for the stack and loads the first card for that stack. Although it's not strictly correct you can call this card the Home card for the stack. It has special options available on it, and it contains a title for the stack.

Now you can begin to use the ideas of PAB. Figure 2 shows the Home card for the Enos stack. Normally, the pointer on screen is tied to the cursor keys. Try them and the pointer will move in the direction of the cursor keys pressed. The *Return* key acts as a single mouse button. Moving the pointer anywhere on the screen and pressing *Return* results in either an action (if we've pressed a screen button), or nothing if there actually is nothing to 'press'.

Notice the two buttons at the top of the card, labelled *Mouse* and *Keyboard*. These buttons can change the input device from cursor keys plus *Return* to a mouse where only the leftmost button is active. The mouse driver chosen is my own favourite – the Acorn VFS chip, as used on the Domesday system.

It's a pity this chip isn't more easily available, because it would certainly encourage more people to investigate Wimps. If this chip is installed then moving the cursor key pointer to the button marked as 'Mouse' and pressing *Return* removes the cursor key input and transfers control to any mouse attached to the User port. If you don't have the VFS chip, then the program in listing 3 allows you to use an AMX-type mouse.

The rest of the instructions apply to the mouse versions as well as to the cursor key version of software. The expression 'Click' simply means either press the leftmost mouse button, or press *Return*, depending on what you use.

Take a look at figure 2. There are five

| Mouse | Home Card | Keyboard |
|--|-----------|----------|
| <p align="center">'E' Numbers and Additives in Food</p> <p align="center">On test from Cleveland High Technology Initiative</p> <p align="center">Ann Porter's Version on V1.00 UserCard - Sept '88</p> | | |
| <p>Exit Change Stack << First Card >></p> <p>Print this card Print all Cards</p> | | |

Figure 2. The Home card for the Enos stack

| 'E' Numbers and Additives in Food | |
|--|-----------------------------|
| E No: | 101 |
| Hyperactive sensitive: | <input type="checkbox"/> |
| Name: | Riboflavin (Vitamin B2) |
| Found in: | Sauces/Cereals/Proc. Cheese |
| Uses: | Involved in Energy Release |
| Comments: | Also found in meat/milk/veg |
| Dangers: | None |
| <p>Home << < ?? > >></p> <p>Print this card</p> | |

Figure 3. Typical information card with its seven buttons

buttons available to be pressed by your pointer:

- The 'Exit' button
- The 'First card' button
- A 'Print this card' button
- A 'Print all cards' button
- A 'Change stacks' button

To select any button, simply move the pointer to that button and click. Clicking on the *Exit* button will give a message asking you to confirm that you do want to leave the *User Card* stack. Click again to do this or hit *Escape* to cancel. *Exit* from the *User Card* stack is back to the Basic language.

The first Card button has a simple icon at the front <<, which is reminiscent of the rewind button on tape-recorders. Simply click on this key to go to the first card in the stack.

Click on the 'Print this card' button for a fast screen dump of the card currently on screen. In this case, it's the

Home card, but any card with a 'Print this card' button can be dumped on an Epson-compatible printer. A warning message to set up the printer appears, and when action is re-clicked, the card is dumped to the printer. If the printer is not set up, then the system can hang, and the only way out will be via the *Break* key. The *Escape* key will abort this action right up to the last moment, after you confirm that the printer is set up.

The 'Print all cards' button issues the same message as the previous one, and you must decide whether to use *Escape* to cancel its action, or set up the printer and re-click. Once the action is confirmed, all the cards in the stack are printed – this takes a little while. The cards are printed exactly three to a sheet of 66-line fanfold paper, so make sure the first one starts near the top of the paper.

To change to another stack, the 'Change stacks' button restarts the Dealer



PROFESSIONAL COVERS FOR THE BBC MICRO RANGE



DIRECT FROM THE LEADING MANUFACTURER

Tailored from the best quality ivory coloured nylon that has been coated with polyurathane to which an anti-static inhibitor has been added. These fabric covers are tastefully finished with brown piping and have the model name hot foil printed over the keyboard. They are washable and can be ironed with a cool iron.

NEW

ARCHIMEDES: £9.00

BBC COMPACT SET £9.00
(Please state whether colour or monochrome monitor).

BBC MASTER £5.00
BBC B/B+ £5.00

MATCHING COVERS FOR PRINTERS, MONITORS AND DISC DRIVERS

A large range of covers for printers, monitors and disc drives are available to match the computer covers.

PRINTERS COVERS FROM £5.00
MONITOR COVERS FROM £6.00
DISC DRIVE COVERS FROM £3.00

If you have a specific requirement please do not hesitate to contact us as we will be delighted to help.
Prices include VAT and First Class Postage. All our covers are unconditionally guaranteed. Please make cheques out to:

BBD Computer Dust Covers
Dept. 64 The Standish Centre
Cross Street
Standish, Wigan WN6 0HQ



Callers and Dealer inquiries welcome

TEL: 0257 425839 ext 64 FAX: 0257 423909

Multiprom Eprom Programmer

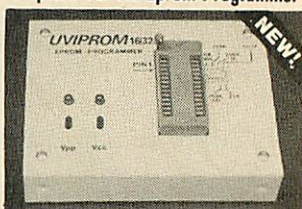


Multiprom Eprom Programmer

- ★ Programs 2764, 27128, 27256, 27512, 27513 & 27011, inc. "A" & CMOS types.
- ★ Plugs into user port on BBC B, 128 or Master.
- ★ High Quality TEXTTOOL ZIF socket.
- ★ 21 or 12.5 Volt programming.
- ★ UVP 1.1 ROM has five * commands.
- ★ Custom made cream aluminium case.

£45.00

Uviprom 16/32 Eprom Programmer



Uviprom 16/32 Eprom Programmer

- ★ Programs 2764, 27128 & 27256, including "A" & CMOS types.
- ★ Plugs into user port on BBC B, 128 or Master.
- ★ High Quality TEXTTOOL ZIF socket.
- ★ 21 or 12.5 Volt programming.
- ★ UVP 1.1 ROM has five * commands.
- ★ Very easy to use hardware and software.

£30.00

Uvipac Eprom Eraser

The UVIPAC was designed especially for the home computer enthusiast requiring to erase up to 3 EPROMs at a time. Also erases Datapaks.

- ★ Compact 90 x 80 x 40mm size.
- ★ 240 Volt mains powered.
- ★ 15 Minute timer option in (T) model.
- ★ Timer + sounder option in (TS) model.
- ★ Spare tubes only £3.00.

UVIPAC

£21.50

UVIPAC (T)

£26.50

UVIPAC (TS)

£28.50



Multiprom Special Offer!!

Save £6.50 by purchasing a Multiprom and a UVIPAC (T) together. Normal price £71.50.

SPECIAL OFFER PRICE £65.00

| EPROMS | 1-2 | 3-9 | 10 up |
|-----------|-------|-------|-------|
| 27128-25 | £4.10 | £3.90 | £3.70 |
| 27C128-20 | £4.40 | £4.10 | £3.90 |
| 27256-25 | £5.00 | £4.90 | £4.80 |

All types use 12.5 Volt Vpp
S.A.E for old UVIPROM 21 to 12.5 data.

Ground Control

TEL: 0702 230324

DEPT AU1
GROUND CONTROL
ALFRED AVENUE
HULLBRIDGE
ESSEX SS5 6LT



ALL PRICES INCLUDE
VAT AND P&P
MAIL/TELEPHONE ORDERS
ONLY PLEASE.
EDUCATIONAL AND
GOVERNMENT ORDERS
WELCOME.

ALL OUR PRICES INCLUDE CARRIAGE & VAT
HSV COMPUTER SERVICES LIMITED (AU)
23, Hampstead House, Town Centre, Basingstoke, RG21 1LG.

DISKS UNBRANDED LIFETIME GUARANTEE

| Quantity | 10 | 20 | 30 | 40 | 50 | 100 |
|-------------------------|------|-------|-------|-------|-------|-------|
| 3 1/2" DS/DD 135 TPI | 9.95 | 18.95 | 27.95 | 36.95 | 45.95 | 89.95 |

ALL 3 1/2" DISKS COME COMPLETE WITH LABELS

| | | | | | | | |
|-----------------|--------|------|-------|-------|-------|-------|-------|
| 5 1/4" DS/DD | 48 TPI | 5.95 | 8.95 | 11.95 | 14.95 | 17.95 | 33.95 |
| DS/QD | 96 TPI | 6.95 | 9.95 | 13.95 | 16.95 | 19.95 | 37.95 |
| DS/QD Coloured* | 96 TPI | 7.95 | 13.95 | 19.95 | 24.95 | 29.95 | 57.95 |
| Universal** | 96 TPI | 7.95 | 13.95 | 19.95 | 24.95 | 29.95 | 57.95 |

*Colours available: Red, Blue, Green, Yellow, White, either in boxes of ten or mixed two of each colour

**Universal disks are suitable for 40/80 track drives and have 2 notches and 2 holes.

ALL 5 1/4" DISKS SUPPLIED WITH WRITE PROTECT TABS, LABELS AND ENVELOPES AND COME WITH OUR NO QUIBBLE MONEY BACK OR REPLACEMENT GUARANTEE.

DISKETTE STORAGE BOXES

| | Price Each |
|----------------------------------|------------|
| 10 X 5 1/4" LIBRARY CASE | £1.25 |
| 50 X 5 1/4" HINGED LID LOCKABLE | £6.95 |
| 100 X 5 1/4" HINGED LID LOCKABLE | £8.95 |
| 120 X 5 1/4" HINGED LID LOCKABLE | £10.95 |
| 10 X 3 1/2" LIBRARY CAST | £1.25 |
| 40 X 3 1/2" HINGED LID LOCKABLE | £6.95 |
| 100 X 3 1/2" HINGED LID LOCKABLE | £8.95 |

BOXES WITH DISKS

| | |
|--|-------------------|
| 50 X 5 1/4" DISKS + 100 CAP.BOX DS/DD | 23.95 DS/QD 25.95 |
| 100 X 5 1/4" DISKS + 120 CAP.BOX DS/DD | 39.95 DS/QD 43.95 |
| 20 X 3 1/2" DISKS + 40 CAP.BOX DS/DD | 23.95 |
| 50 X 3 1/2" + 100 CAP.BOX DS/DD | 49.95 |

SPECIAL PURCHASE

| | |
|---|-------|
| 50 X 5 1/4" DISKS IN UNLOCKABLE 50 CAPACITY BOX DS/DD OR DSQD | 21.95 |
|---|-------|

[MINIMUM ORDERS OF £8]



Credit Card Hotline (0256) 463507 Faxline (0256) 841018



program and prompts you for a new stack name. This is of limited use at this moment, because you have only got one demonstration stack.

There are a number of other buttons which are common to all the information cards in the stack. An information card is shown in Figure 3, with its buttons: Home, Print this card, First card, Previous card, Next card and Last card, plus a Find card button. The Home button simply takes us to the Home card. The Print this card button and the Goto first card button have already been covered.

All the Goto buttons are redesigned as brief icons. The First card icon is the < < shape and the Last card is indicated by > >, again common to some tape recorders. Clicking this button takes us to the last card in the stack.

The Goto next card button has a forward icon, >, which moves you on one card whenever it is clicked. At the end of the stack, a warning message appears and forward movement stops.

The Goto previous card button has a reverse icon, < moving you back one card whenever clicked. At the beginning of the stack, a warning message appears and movement backward stops.

The Find card button has a ?? icon. When it is clicked on, it moves you to a card that allows you to find other cards by specifying part of their contents. Once clicked on, a new card appears with four buttons, as shown in Figure 4:

- The Home button
- A 'Brief' radio button
- A 'Find matching cards' button
- A 'Print matching cards' button

The Home button works as normal, but the other three require explanation. We click on the Find matching cards button to get a query window asking for some text to search for. Once the text is entered, and Return pressed, the stack is searched from the first to the last card for any occurrences of the text. It is very important to type exactly what you are looking for. For example: 'Jelly' will find the word Jelly and not Jellies, while 'Jell' will find both Jellies and Jelly, and 'ell' will find Jellies, Jelly and Yellow.

As each card is found it is displayed on the screen and can be read. To move onto the next matching card, simply click again. At the end of the search, the final match is left on screen. If no match is made, the card from which the search was started is displayed. A search can be cancelled by pressing Escape at any time.

Figure 4. The find card allows searching for text

Figure 5. Results of a brief search: part of each card is listed

Figure 6. All matching cards are shown in a full search

The Print matching cards button behaves in the same way as the Find cards button, except that all the matching cards are dumped to the printer as they are found. Have the printer ready to go before confirming this button's action.

The Brief button is called a 'radio button' because of its shape and action. It is set 'on' when its active area is clicked. It then stays on until the button is clicked again. When the Brief button is clicked, searching via the Find or Print matching card buttons is carried out as normal, except that only the first three

fields of each matching card are printed on screen or on the printer. This gives a table of the matching cards on which further searches can be based.

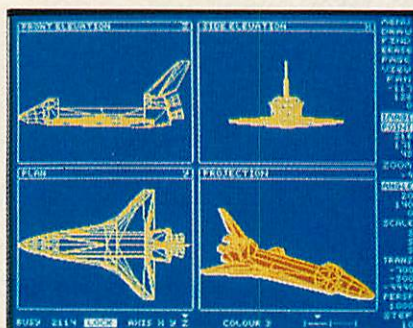
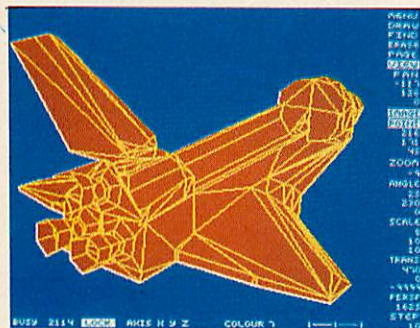
A more complete version of this stack, including many more additives, is available to schools from the Cleveland High Technology Initiative, Prissick Base, Marton Road, Middlesbrough, Cleveland.

If this demonstration stack interests you, then look out for a more general-purpose version soon, which allows the creation of new stacks and the linking together of cards for cross-referencing.

SILICON VISION

SOFTWARE FOR THE ARCHIMEDES & BBC

SolidCAD



The ultimate 3D Draughting System for Architectural design, Interior design, Engineering Design and Teaching CDT. Allows drawing in plan, front & side elevations and also directly in 3D view. Includes powerful zoom & pan options for precision draughting and surface definition for creating solid colour objects. Also includes Sweep, Extrude & Macro facilities for designing very complex objects easily. Designs created with SolidCAD are compatible with the Realtime Graphics Language for high-speed flicker-free animation. The custom Archimedes version also performs smooth shading for realism. SolidCAD(Arc) users can upgrade to the Realtime Solids Modeller (Arc) for £40.00.

£49.95 (ARC & BBC) **New**

REALTIME SOLIDS MODELLER

The package includes both the sophisticated design environment of SolidCAD and the high speed animation capability of a Realtime Graphics Language (RGL) module developed in pure ARM Risc code for supercharged performance. The package is ideal for Architectural design, Interior design, Engineering design & teaching CDT. The RGL module can be used to create standalone flicker-free animation of designs from your own programs. Smooth shading is also performed for realistic images. Through our in-house expertise in 3D Design and High-speed techniques, no other package can rival the design environment & animation speed of the Realtime Solids Modeller.

£89.95 (ARC) **New**

REALTIME GRAPHICS LANGUAGE

The Realtime Graphics Language rom provides a complete 3D Solids/Wireframe animation system with 52 star commands and 3D Editors for designing objects to animate from your own programs. Includes a 35,000 pixels/sec line generator for fast 3D drawing rates, 3D Rotate, Scale, Orbit, Perspective and Turtlegraphics. Also compatible with designs created with SolidCAD (BBC).

£49.95 (BBC)

SUPER-DUMP

The ultimate printer driver which takes advantage of the highest resolution capability of ordinary Epson compatible printers to provide 1920x1024 resolution. Images can also be scaled, positioned and previewed before printing. Fully compatible with SolidCAD, Realtime Graphics Language, Gate-Array design system & 3D CAD/Animation system. Your own graphics programs or other CAD packages can be made compatible with Super-Dump by the addition of a few simple commands. An example program is included in the package.

£15.95 (BBC), £24.95 (ARC) **New**

Presentation Manager


The package provides an interactive environment to create, edit and play-back computer controlled presentations for lectures and demonstrations. Also handles graph plotting for polynomials & user-defined functions which can be incorporated within the presentations.

£34.95 (BBC), £49.95 (ARC) **New**

SILICON VISION LTD, SIGNAL HOUSE, LYON ROAD, HARROW

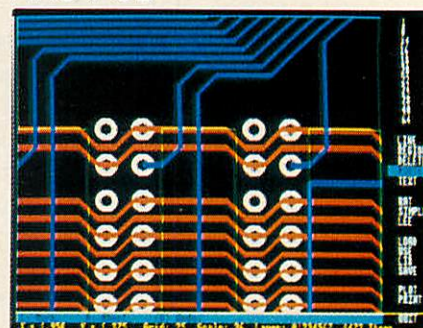
MIDDLESEX HA1 2AG. TEL: 01-422 2274 or 01-861 2173

FAX: 01-427 5169. TELEX: 918266 SIGNAL G.

 (Access/Mastercard/Eurocard accepted)

All prices include VAT and Carriage (Overseas orders add £4).

ARC-PCB



The ultimate PCB design system developed specifically for the Archimedes with a specification that cannot be matched. Includes Automatic routing, Rats-nesting, 8 layers, Surface mount capability, 0.001" resolution, 32"x32" maximum board size, On-line Help, Fast Zoom/Pan/Redraw, Text & Silkscreen facility, Variable Line/Pad/Text/Grid sizes, Part Libraries, Block Move/Copy/Rotate/Mirror/Erase options, and up to 300,000 components. For hardcopy, the system supports a large number of plotters and ordinary Epson compatible printers at very high resolutions (1920x1024) of 240 dots/inch for near laser quality output. An entry-level ARC-PCB system (without auto-routing) is available for £99.95 (Auto-routing upgrade: £100). Enquire about our turnkey PCB design systems complete with Colour Archimedes and/or plotters with prices from £1220 to £3909 (Inc VAT).

£195.00 (ARC) **New**

RiscBASIC

Supercharge your Archimedes Basic programs by compiling them automatically into pure ARM Risc code with the RiscBASIC compiler. Features include Relocatable modules, Cross reference of all variables, functions, and procedures, Floating point and Integer support, Stand alone code generator, Optimising compiler & Full runtime error handler.

£99.95 (ARC) **New**

RiscFORTH

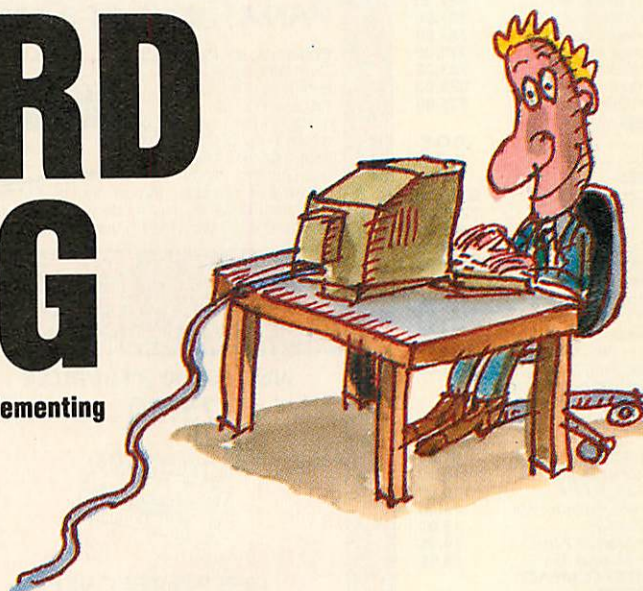
A new 32-bit implementation of the FORTH-83 standard, designed to take full advantage of the ARM architecture. Features include Multi-tasking, Optimising compiler, built-in ARM assembler with floating point mnemonics, built-in Full screen Editor, File system interface, OS calls support, Floating point & Integer maths, WIMP support, Single-step debugger, Shadow screen for documentation, Block manipulation, Dictionary & Vocabulary display, Call finding and a standalone code generator.

£99.95 (ARC) **New**

STANDARD SETTING

We describe the more advanced functions that implementing GKS provides, relating to segments

Guy Martin and Gary Phillips



Segments allow you to collect a set of lines and text that produce an image on the screen. This whole segment may then be acted upon as a single object. Segments are like disc files, in that they can be opened, written to, read from, closed, deleted, or renamed. But unlike files, GKS segments can only be used as a whole; after you have created a segment, the individual line or text elements are not accessible.

A segment is given a name that identifies it uniquely. In this BBC Basic version of GKS, integers are used as segment names, the range 0 to SEGMAX-SEGMAX varying according to the available memory on your Archimedes.

Segments could be used to create a collection of objects in an application. As an example, for circuit board design, segments can be defined for various circuit board symbols: transistors, integrated circuits, a resistor, for instance. These symbols may then be placed on the screen at will. Segments are in contrast with sprites, as sprites are bit map objects, and so they cannot be easily scaled or rotated.

Segments are stored in Archimedes' main memory. The library does not know, in advance, how much memory it will require for segment storage so you need some method of memory management. The management routines must allow allocation of variable-sized chunks of memory, and subsequent freeing of that memory for using again by other segments. This corresponds with segment creation and deletion.

As you know at least something about

what GKS will need to store in the memory, the memory management routines can be fairly simple. In fact, a block of memory is allocated for storage when GKS is opened.

A parameter is passed to the open_gks call specifying how much storage to allocate. This should vary depending on whether the library is being used on an A305, a 1 megabyte or 4 megabyte machine. This memory is divided among the segments as they are created, and a form of garbage collection occurs when a segment is deleted, to free the memory used by that segment.

The manipulation routines for segments are given in table 1. They are analogous to file creation (open), close, read, delete and rename functions.

Consider a situation where the program wants to create a symbol to be used later

```
create_segment (segment_name)
close_segment ()
delete_segment (seg_name)
rename_segment (old_segment_name, new_segment_name)
insert_segment (segment_name, transformation_matrix)
redraw_all_segments_on_workstation (workstation_id)
```

Table 1: manipulation routines

on. The following fragment shows how this is achieved:

```
create_segment (1)
polyline (num_points_part1, symbol_part1_x(), symbol_part1_y())
polyline (num_points_part2, symbol_part2_x(), symbol_part2_y())
close_segment()
```

The call to create_segment causes all subsequent output primitives to be stored

in the first segment until the call to close_segment is issued. The primitives are also drawn on screen in the usual way, according to the current window, viewport, and clipping settings. The two calls to polyline after the create_segment call, cause two sections of the symbol to be stored in segment '1'. The segment is then closed. Any further output primitives will not be stored in this segment, but will just go to the screen as usual.

Only one segment may be open for output at any one time; you cannot have nesting. The second segment can only be opened after the first is closed.

But suppose you wished to create a new segment that incorporated all of the parts of segment 1, plus some other lines and dots. Look at the following code fragment:

```
create_segment (2)
polyline (num_points_part3, symbol_part3_x(), symbol_part3_y())
insert_segment (1, transformation_matrix)
polyline (num_points_part4, symbol_part4_x(), symbol_part4_y())
close_segment ()
```

The create_segment call creates a new segment 2 ready to accept output primitives. You then call an output primitive (polyline), and start the new segment. Insert_segment is then called giving it the parameters, segment 1 and a transformation matrix. This has the effect of adding the first segment to the second.

It is possible to apply a transformation to the symbol in segment 1 as it is copied across to segment 2 as will be shown later. Finally, another output primitive (polymarker) is called and the new segment is closed.

TWILLSTAR COMPUTERS LTD

| | |
|----------------------|--------|
| ARCHIMEDES | |
| 305 BASE AKB10 | 612.00 |
| 305 & mono monitor | 665.00 |
| 305 & colour monitor | 827.00 |
| 310 BASE AKB15 | 731.00 |
| 310 & mono monitor | 783.00 |
| 310 & colour monitor | 922.00 |
| A310M AKB30 | 783.00 |
| A310M mono | 835.00 |
| A310M colour | 975.00 |

| | |
|-------------------|--------|
| 410 SERIES | |
| Mono | P.O.R. |
| Colour | P.O.R. |

| | |
|--|---------|
| 440 SERIES | |
| Entry System | 2210.00 |
| Mono | 2263.00 |
| Colour | 2403.00 |
| Archimedes/Master Econet | 43.00 |
| 0.5 MB RAM | 127.00 |
| Floppy disk | 110.00 |
| 20 Mbyte hard disk & podule (300 only) | 423.00 |
| Podule Backplane | 35.00 |
| Archimedes Pref. Manual | 29.95 |
| Assm. Lang Prog Manual | 11.00 |
| Archimedes software in stock | |

| | |
|---------------------------------|--------|
| MASTER 128 | |
| Complete with internal Software | 346.00 |
| Master Turbo Upgrade | 99.00 |
| Master Econet Module | 40.00 |
| Master 512 Upgrade | 110.00 |
| Universal second processor | 75.00 |
| Eprom Cartridge | 13.00 |
| Reference Manual Part 1 | 14.95 |
| Reference Manual Part 2 | 14.95 |

| | |
|--|--------|
| BBC MASTER COMPACT ENTRY SYSTEM | |
| *128k* *Single 640K Drive* | |
| *Bundled Software* | 306.00 |

| | |
|---|--------|
| TV SYSTEM | |
| *128k* *Single 640K Drive* *UHF Modulator* *Bundled Software* | 319.00 |

| | |
|---|--------|
| MONO SYSTEM | |
| *128k* *Single 640K Drive* *Bundled Software* *12" High Res Monochrome Monitor* | 349.00 |

| | |
|---|--------|
| COLOUR SYSTEM | |
| *128k* *Single 640K Drive* *Bundled Software* *14" Medium Res Colour Monitor* | 481.00 |

| | |
|---|--------|
| MONITORS | |
| Philips BM 7502 | |
| 12" Hi res. P31 Green Phosphor Screen. CVBS input. Audio input Band width 20 MHz. 2000 CHRS Display | 68.00 |
| Samsung 12" Mono White | 89.00 |
| Samsung 12" Mono Green | 89.00 |
| Samsung 12" Mono Amber | 97.00 |
| Samsung 14" | |
| Mono Hi Res White | 97.00 |
| Samsung 14" | |
| Mono Hi Res Green | 97.00 |
| Samsung 14" | |
| Mono Hi Res Amber | 109.00 |
| Samsung 14" CGA | 249.00 |
| Samsung 14" CGA/EGA | 335.00 |
| Samsung 14" VGA | 335.00 |
| Samsung 14" Multiscan | 355.00 |

| | |
|---|--------|
| COLOUR MONITORS | |
| Philips CM8833 | |
| 14" CVBS and RGB medium resolution colour monitor. IBM PC compatible. Fast blankup to enable superimposing. Stereo Audio. Ear phone socket. 600 dots x 285 lines vertical | 220.00 |
| Philips CM8852 | |
| 14" RGB professional med res colour. 700 dots x 285 | 251.00 |

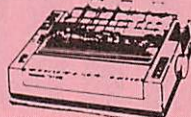
| | |
|----------------------------|-------|
| PARALLEL T SWITCHES | |
| Parallel T switch (2 way) | 15.00 |
| Parallel T Switch (4 way) | 25.00 |

| | |
|---|--------|
| MITSUBISHI DISC DRIVES | |
| Source 100% BBC compatible slimline disk drives. All drives supplied complete with formatting diskette, comprehensive users manual and all necessary cables. All drives are 40/80 switchable and have two years warranty. | |
| 514" Drives without P.S.U. | |
| 400A Single 400K Double Sided | 98.00 |
| SD 802C Dual 400K Double Sided | 190.00 |
| 514" Drives with P.S.U. | |
| 400B Single 400K Double Sided | 117.00 |
| SD 802E Dual 400K Double Sided | 204.00 |
| SD 802D Dual 400K Drives horizontally mounted in a monitor stand to fit both the BBC B and the Master series | 230.00 |
| Mitsubishi Bave drives uncased with 40/80 switch | 77.00 |

| | |
|--|--------|
| WINCHESTER DISC DRIVES | |
| 20 Mbyte | 408.00 |
| 30 Mbyte | 432.00 |
| 40 Mbyte | 552.00 |
| 60 Mbyte | 672.00 |
| All Winchester come ready to plug into the Master 128. | |
| ADFS RAM required for BBC | 26.00 |

PANASONIC KX-P 1081

Panasonic KX-P1081. 135.00
The faster and enhanced KX-P1081. 120 cps in draft mode. 24 cps in NLO mode. Fully Epson RX80 and IBM Matrix and Graphics Printers compatible. Standard friction and tractor feed. Operator accessible print mode switch. Standard 8 bit parallel interface. RS232 interface is optional.



NEC P2200 PINWRITER 275.00 + VAT



FREE PRINTER CABLE FREE PRINTER STAND FREE 200 SHEETS PAPER

24-pin dot-matrix printer. Letter-perfect print, in several sizes, at 56 characters per seconds (cps). Or switches to draft mode for high-volume outputs at 168 cps. Built-in tractor that permits push or pull feeding.
Print Rate: High-speed draft: 168 cps. Standard draft: 140cps. Letter quality: 56 cps
Pinthead: Impact, 24-pin dot matrix.
Input Buffer: 8K standard
Graphic Resolution: Up to 360 x 360 dpi
CUT SHEET FEEDER 59.00
SERIAL INTERFACE KIT 55.00
FRONT CARTRIDGE 25.00

NEC MONITORS OFFICIAL NEC UK PRODUCTS

MULTISYNC PLUS 695.00
This 15 inch, high resolution (1024 x 768) monitor is ideal for use with IBM/XT/AT and PS/2 plus Apple Mac II and other IBM PC compatible microcomputers. It automatically scans all horizontal frequencies from 21.8 KHz to 48 KHz and vertical frequencies ranging from 50 to 90 Hz. It supports EGA, enhanced EGA, PGC, MCGA, and VGA colour graphics standards.
MULTISYNC II 450.00
This redesigned 14" Multisync high resolution monitor offers all the benefits of the previous model such as automatic synchronisation, suitable for use with IBM/XT/AT and PS/2 plus Apple Mac II and compatible with Hercules, MDA, CGA, EGA, EGA+, PGC, and VGA graphics standards plus front mounted user controls and automatic selection of Analog/TTL and Vertical Hold modes.
MULTISYNC GS 149.00
Offers the user a high resolution (720 x 480), 14 inch monochrome display which is hardware compatible with IBM PC, XT, AT, and PS/2 machines. The MultiSync GS supports MDA, Hercules, CGA, EGA, MCGA and VGA display standards. It automatically locks on to one of five frequencies from 15.7 to 31.5 KHz to support all the above major graphics standards and three vertical frequencies ranging from 50 to 70 Hz.

| | |
|--|--------|
| PC ADD ONS | |
| 20 Mb Hard Disk | 199.00 |
| 30 Mb Hard Disk | 240.00 |
| 20 Mb Hard Card | 199.00 |
| 30 Mb Hard Card | 240.00 |
| Other PC products available. Call for details. | |

| | |
|-------------------------------------|--------|
| SPECIAL PACKAGE | |
| Philips CM8833 Monitor and TV Tuner | 249.00 |
| Save £45. | |

Maintenance contracts available. Authorised service centre. Call for details 01-574 5271



APEX HOUSE
BLANDFORD ROAD
NORWOOD GREEN
SOUTHALL
MIDD UB2 4HD
☎ 01-574 5271 or
☎ 01-571 5938
Telex: 25247 Telex G. attn TIL
Fax: 01-574 4326

You can purchase any of the items listed. All you have to do is write your requirements on a sheet of paper, and we will despatch your goods within 24 hours, subject to availability. Please add the following amounts for Postage and Packing.

| | | | |
|--------------------|----------|-------------------|----------|
| Items below 10.00 | add 1.50 | Items below 50.00 | add 2.50 |
| Items below 100.00 | add 3.50 | Items over 100.00 | add 8.00 |

(UK Mainland only)
All prices exclude VAT. Please add 15% VAT to all orders.
Prices correct at time of going to press but subject to change without notice.
Please make cheques payable to: **TWILLSTAR COMPUTERS LTD.**
Access/Visa Card Holders: Welcome.
VISIT OUR MEGA-COMPUSTORE OPEN 9am - 6pm Monday to Saturday
CREDIT FACILITIES, we are authorised credit brokers, Typical APR 36%

PRINTERS

| | |
|--|--|
| AMSTRAD LQ3500 250.00 | |
| 24 pin NLO 160cps. LQ 54CPS. Prints graphics output. Supplied with bolt-on tractor and featuring PC and Epson LQ-1500 compatibility. | |
| (Subject to availability) | |
| AMSTRAD DMP4000 250.00 | |
| 200cps wide-carriage. Inbuilt tractors allow fast paper slew rates, and PC and Epson FX compatibility. | |
| (Subject to availability) | |
| NEW PRINTERS | |
| AMSTRAD DMP3250 dl 189.00 | |
| AMSTRAD LQ3500 dl 299.00 | |
| AMSTRAD LQ5000 dl 330.00 | |

| | |
|--|--------|
| STAR LC-10 189.00 | |
| New enhanced version complete with IBM & Parallel Interface | |
| Sheetfeeder | POA |
| STAR LC-10 Colour 219.00 | |
| Ribbon | 4.70 |
| STAR LC-24/10 279.00 | |
| MP135 | |
| 135 cps, 80 column printer. Friction tractor feed. NLO. Epson & IBM Compatible | 126.00 |

| | |
|-----------------------|---------|
| EPSON PRINTERS | |
| LX-800 | 199.00 |
| FX-800 | 330.00 |
| FX-1000 | 420.00 |
| EX-800 | 420.00 |
| EX-1000 | 565.00 |
| LO-500 | 299.00 |
| LO-850 | 449.00 |
| LO-1050 | 620.00 |
| LO-2500+ | 720.00 |
| LO-2550 | 899.00 |
| SO-2500 | 969.00 |
| SO-3500 | 1199.00 |

| | |
|--|---------|
| NEC PINWRITER P9XL | |
| P960XL | 885.00 |
| P965XL Serial/Parallel | 970.00 |
| NEC SILENTWRITER LC866+/LC890 | |
| LC866+ | 1870.00 |
| LC890 | 2995.00 |
| FREE with Silentwriter 12 months onsite maintenance contrac. | |

| | |
|-----------------------------|--------|
| NEC PINWRITER P5XL | |
| P565XL Serial/Parallel | 740.00 |
| Pin tractor | 50.00 |
| Bi-directional tractor | 125.00 |
| Single bin cut sheet feeder | 240.00 |
| Double bin cut sheet feeder | 440.00 |
| Font cartridge | 40.00 |
| RAM cartridge | 30.00 |



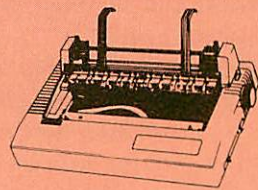
NEW NEC PINWRITER P6/P7
The ultimate matrix printer for business. Print speeds of 265cps in draft and 90cps in letter quality. Inbuilt tractors. A paper park and low tear off facility. Twenty inbuilt fonts as standard. A font cartridge facility for greater flexibility. An amazing 80K byte print buffer. 24 pin pinthead. Centronics parallel interface. Compatible with previous NEC 24 pin printers.
P6+ 80 characters 434.00
P7+ 136 characters 608.00

DAISYWHEELS

| | |
|--|--------|
| BROTHER HR 20 | |
| Daisywheel 8K standard buffer | |
| upgradable to 16K. Standard serial/parallel port | 338.00 |
| JUKI Daisywheel | |
| Juki 6100 | 286.00 |
| GAKKEN GPR-2000 | |
| Print speed of 18 characters per second. Fully Qume compatible. Takes Qume exchangeable Daisywheel and ribbons. Selectable 10, 12 & 15 pitch. Supports proportional spacing. Standard friction feed. Tractor/cut sheet feeder and serial interface optional. | 146.00 |
| CITIZEN Daisywheel | |
| Premiere 35 | |
| 35cps 15" daisywheel. Diablo compatible | 399.00 |

PRINTERS

| | |
|---|--------|
| CITIZEN 120D 117.00 | |
| Dat Matrix Printer. 120cps NLO. 2 year warranty. You have to see the quality at this price. | |
| CITIZEN LSP 100P 138.00 | |
| 120/25cps 80 column Centronics IBM Parallel | |
| CITIZEN MSP 15E | |
| 160/40cps 136 column Centronics IBM Parallel | 240.00 |
| CITIZEN HQ P40 350.00 | |
| 80 column, 24 pin. Dual interface. Colour Option | 50.00 |
| Colour Ribbon | 20.00 |
| CITIZEN HQ P45 310.00 | |
| 136 column, 24 pin. Dual interface. | |
| NEW | |
| CITIZEN 180E 169.00 | |
| 175cps Draft Elite | |
| 30 NLO. 4k Buffer. | |
| 2 year warranty. | |



CITIZEN 120D



CITIZEN HQ P40

PRINTERS

Manipulation functions

The `create_segment` routine tells the GKS library that you wish to create a new segment. The parameter is the segment name, and an error occurs if a segment is already open, if a workstation is not active, or if a segment of that name exists. Otherwise subsequent graphics drawing will be stored in the segment.

To inform the GKS library that you've finished writing graphics to the current segment, use `close_segment`. No name is required as a parameter, as only one segment can be open at any time.

`Delete_segment` asks the GKS library to throw away any information relating to the segment name specified, thus freeing the memory for new segments.

You can also rename a segment, even if it is currently open. The `rename_segment` call takes two parameters, the old segment name, and the new one. An error occurs if the old

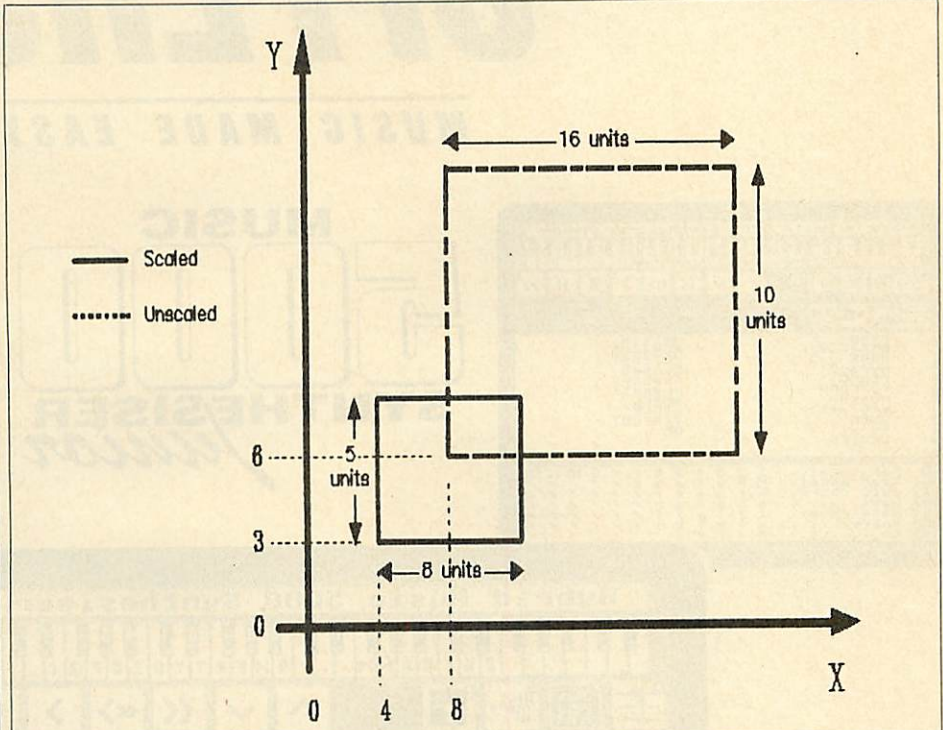


Figure 1. Scaling is performed relative to a fixed point

| | |
|--|--|
| Attributes | |
| <code>set_visibility (segment_name, visibility)</code> | |
| <code>set_segment_transformation (segment_name, transformation_matrix)</code> | |
| Utilities | |
| <code>evaluate_transformation_matrix (fixed_point_x, fixed_point_y, shift_vector_x, shift_vector_y, rotation_angle, scale_x, scale_y, coordinate_switch, output_transformation_matrix)</code> | |
| <code>accumulate_transformation_matrix (input_transformation_matrix, fixed_point_x, fixed_point_y, shift_vector_x, shift_vector_y, rotation_angle, scale_x, scale_y, coordinate_switch, output_transformation_matrix)</code> | |

Table 2: functions affecting segment display

segment doesn't exist, or the new segment already exists.

The `insert_segment` copies drawing primitives from the named segment into the currently open segment. A transformation is applied to the whole copied segment as it is inserted. For convenience, there is an identity matrix already defined, called `IDENTITY_MATRIX`, but this is not a part of standard GKS. This inserts a segment without any changes. The call takes two parameters, the name of the segment to insert, and the transformation matrix. The copied segment remains unaffected.

With the `redraw` call, you redraw all the segments stored: with the viewing surface being cleared first. An error occurs if the workstation is not active.

Just as there are attributes that control the appearance of GKS lines, there are functions that affect the way in which

segments are displayed. These functions are listed in table 2.

Consider a circuit board design package where you have circuit board tracks and components on the same diagram. It may be useful to see just the circuit board tracks – without the components. This can be done by making all the component segments invisible, like this:

```
REM set all components to INVISIBLE
for segname=component_start_name to component_end_name
set_visibility (component(segname), INVISIBLE)
next segname
REM now redraw the board tracks only
redraw_all_segments_on_workstation (active_workstation)
```

The invisible segments are not lost, and may reappear at any time by setting their visibility attribute back to `VISIBLE`. Once segments have been set to `INVISIBLE`, `redraw_all_segments_on_workstation` will not redraw them.

Segment transformations

An example of a segment transformation could be moving a segment from one place on the viewing surface to another – a very common requirement. Consider the code fragment in table 3: this code simply moves the first segment 10 world co-ordinate units on the x direction, and five world co-ordinates on the y direction. The scale factors of one indicate that you do not want to change the size of the object. The `co-ordinate_switch` par-

ameter may be set to 'WC', specifying the world co-ordinate system, or 'NDC' for the normalised device co-ordinate system.

The example uses the world co-ordinate system. The second lot of code in the box shows how to alter the size of a segment. The scaling is performed relative to a fixed point that may or may not be part of the object – as illustrated in figure 1.

This would have the effect of scaling the first segment to twice its original size (the two in both x and y scaling factors). The scale factors are just numbers, but you have told the function that the fixed point is expressed in world co-ordinates, so its meaning depends on the conversion between world, normalised and viewport co-ordinates.

Finally the transformation matrix can be used to rotate a segment about the fixed point. The segment rotation is expressed in radians, and the method is shown in part 3 of table 3.

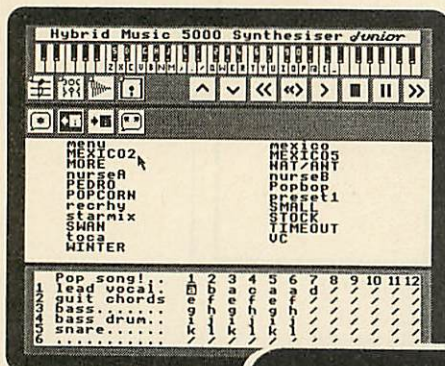
The examples keep the same fixed point in world co-ordinates, and it specifies a rotation of 90 degrees – it is converted to radians using the 'rad' function. Figure 2 shows how different fixed points affect rotation segment.

You can combine the scaling and rotating into one call to `evaluate_transformation_matrix`, and the last part of table 3 shows how to shift, enlarge and rotate an object in one go.

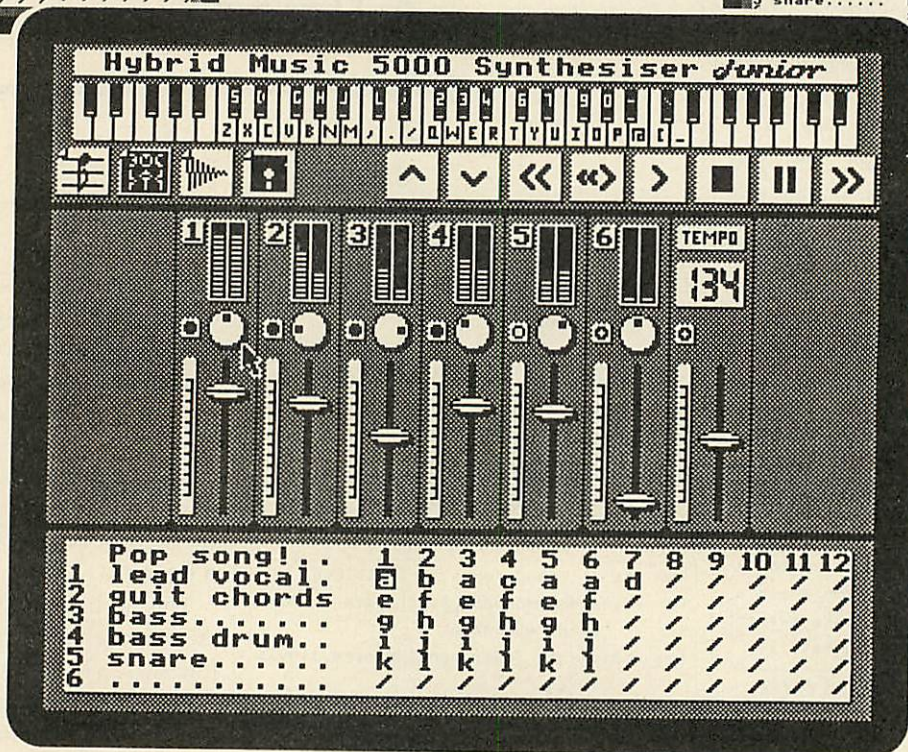
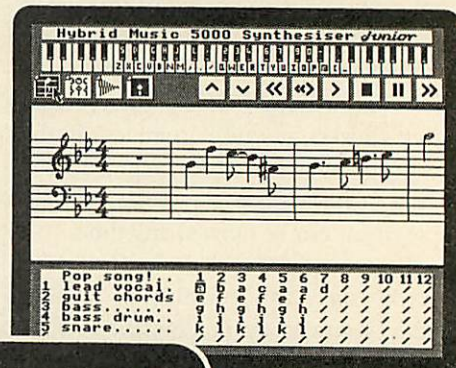
The `set_visibility` function sets the

OFFERS

MUSIC MADE EASY



MUSIC 5000 SYNTHESISER *Junior*



If you have ever dreamt of creating music using your micro but the complexity and expense has put you off, then the new Music 5000 Junior is just what you have been waiting for.

This package gives you the power to create and control complete performances with a wide range of high-quality instrument sounds. This is achieved with the Music 5000 synthesiser and the Junior program ROM, whose high-speed graphics and informative displays make operating it child's play.

The Music 5000 Junior features:

- ☐ Music keyboard: play single notes and chords over five octaves on the computer keys.
- ☐ Icon bar: simply position the pointer to flip instantly between the other sections even while the music is playing.
- ☐ Mixing desk: adjust volume/faders and balance knobs of individual parts when the music plays.
- ☐ Instrument designer: access to an enormous range of instrumental, percussion, synthesiser and sound effects created through six waveforms and envelopes selected from a bank of 45.
- ☐ File manager: use disc icons to load and store pieces, moving pointer to select files from catalogue.

☐ Music arranger: enter title and part descriptions in the text area and construct the piece by filling successive blank cells simply by using the Staff Editor.

The Music 5000 Junior comes with 32k ROM, full documentation, the 5000 synthesiser unit and connections. The package simply plugs into a BBC model B or the Master 128 and existing amplifier (eg, hi-fi) with DIN lead, and is fully upgradable to Music 5000 specifications.

The Music 5000 Junior is only £86.09 plus VAT.

Please send me _____ Hybrid Music 5000 Junior package(s) at £86.09 plus £12.91 VAT.

I enclose my cheque/postal order for £99 per pack made payable to **Hybrid Technology Ltd.**

NAME _____

ADDRESS _____

POSTCODE _____

Send this coupon with your remittance to **Music 5000 Offer, Acorn User Merchandising, Redwood Publishing Ltd, 20-26 Brunswick Place, London N1 6DJ.**

visibility of a segment. It takes two parameters, the segment name and the visibility parameter. The name is an integer; the visibility parameter can only be set to **VISIBLE** or **INVISIBLE**. If the segment is currently visible, and is then made invisible, its image on the view

```
fixed_point_x=0 :fixed_point_y=0
shift_vector_x=10 :shift_vector_y=5
scale_x=1 :scale_y=1
rotation_angle=0 :coordinate_switch=WC
evaluate_transformation_matrix (fixed_po
int_x,fixed_point_y,shift_vector
_x,shift_vector_y,rotation_angle
,scale_x,scale_y,coordinate_swit
ch,transformation_matrix())
set_segment_transformation (1,transformat
ion_matrix())

fixed_point_x=20 :fixed_point_y=30
shift_vector_x=0 :shift_vector_y=0
scale_x=2 :scale_y=2
rotation_angle=0 :coordinate_switch=WC
evaluate_transformation_matrix (fixed_po
int_x,fixed_point_y,shift_vector
_x,shift_vector_y,rotation_angle
,scale_x,scale_y,coordinate_swit
ch,transformation_matrix())
set_segment_transformation(1,transformat
ion_matrix())

fixed_point_x=20 :fixed_point_y=30
shift_vector_x=0 :shift_vector_y=0
scale_x=1 :scale_y=1
rotation_angle=RAD(90)
coordinate_switch=WC
evaluate_transformation_matrix (fixed_po
int_x,fixed_point_y,shift_vector
_x,shift_vector_y,rotation_angle
,scale_x,scale_y,coordinate_swit
ch,transformation_matrix())
set_segment_transformation(1,transformat
ion_matrix())

fixed_point_x=20 :fixed_point_y=30
shift_vector_x=10 :shift_vector_y=5
scale_x=2 :scale_y=2
rotation_angle=RAD(90)
coordinate_switch=WC
evaluate_transformation_matrix (fixed_po
int_x,fixed_point_y,shift_vector
_x,shift_vector_y,rotation_angle
,scale_x,scale_y,coordinate_swit
ch,transformation_matrix())
set_segment_transformation(1,transformat
ion_matrix())
```

Table 3: coding for scaling and rotating

surface is erased. The segment itself still exists and can be made visible later.

When a segment is erased, holes can appear in the other images on the screen. If the other images are redrawn (with `redraw_all_segments_on_work_station`) then these holes will disappear.

Visibility may be changed during the creation of a segment. Any output primitives that have already been produced will have their visibility changed. This

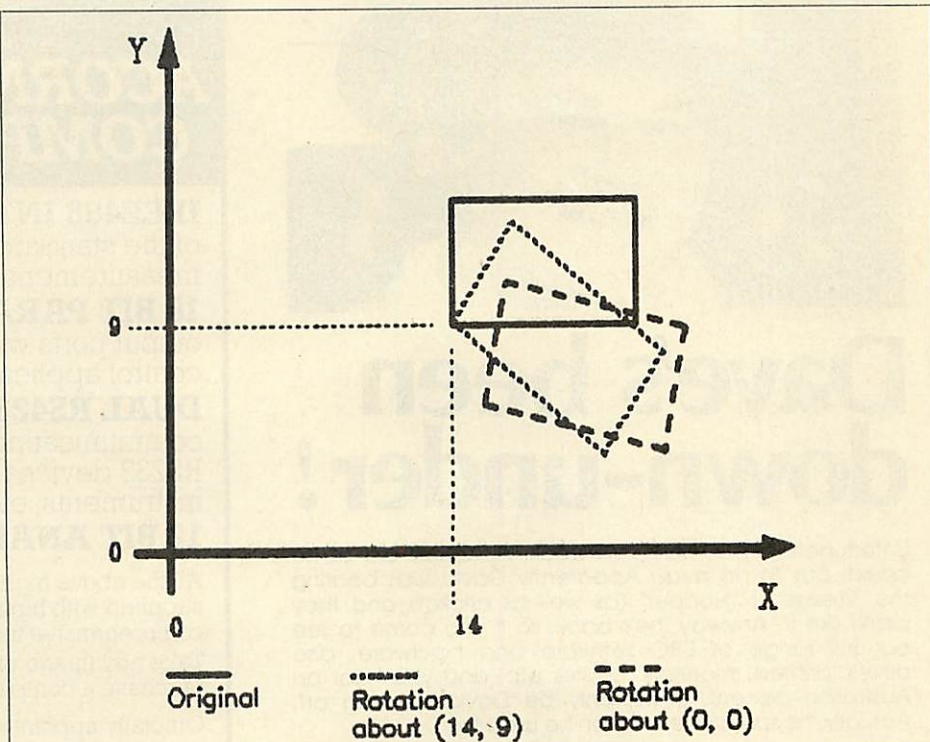
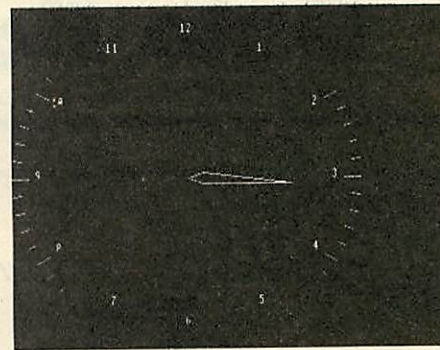
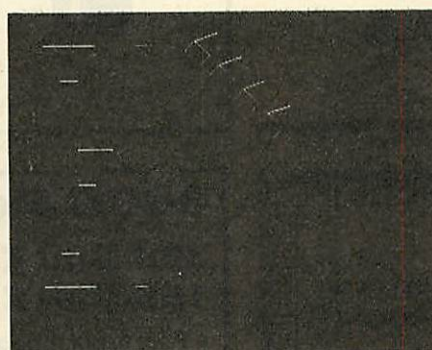


Figure 2. Different fixed points affect the rotation of a segment



The standard allows portable graphics programs GKS clock demonstration on disc

is good for building up groups of symbols without them appearing on screen. The visibility of a segment would normally be set just after the `create_segment` call.

The parameters for the `set_segment_transformation` function are a segment name and a transformation matrix. The transformation matrix is an array two rows by three columns that may be set directly by the application, or made up by the `evaluate` or `accumulation_transformation_matrix` functions. Errors occur if the specified segment doesn't exist, or if GKS isn't in the proper state.

The `evaluate_transformation_matrix` call takes the hard work out of calculating a transformation matrix to use in the `set_segment_transformation` function – it takes no fewer than nine parameters. The first and second specify a fixed point for rotating or scaling about. The third and fourth specify a shift vector. The fifth specifies a clockwise angle of rotation in radians and the sixth and

seventh specify separate x and y scaling factors. The eighth specifies the coordinate system that is used by the fixed point and the shift vector. Last is an output parameter – a matrix in which to put the output transformation.

Adding together separate transformations is made easier by the `accumulate_transformation_matrix` routine. It is near identical to the `evaluate` function, except that the transformation specified by the parameters is added to the input matrix before the result is returned in the output matrix. A rotation can be combined with a shift or a scaling operation, then applied in a single go.

Owing to lack of space, the growing GKS library listings cannot be carried in the magazine. There's a full commented copy on the 3.5-in monthly disc, a cut-down version on the 5.25-in disc, and a print-out can be obtained with an SAE from GKS, *Acorn User*, 26 Brunswick Place, London N1.



Dave's been down-under!

Unfortunately, they sent him back. His father did all he could, but to no avail. Apparently David was beating the Aussies at "Hopper" (as well as cricket) and they didn't like it. Anyway, he's back, so if you come to see our full range of BBC software and hardware, disc drives, printers, monitors, cables etc, and you hear an Australian accent, it will only be David showing off. Actually, he sounds better than he used to!

NUMBER ONE IN BROMLEY

Data Store

6 Chatterton Road, Bromley, Kent. Tel.: 01-460 8991

EXPANSION CARDS FOR THE ACORN ARCHIMEDES COMPUTER SYSTEM

IEEE488 INTERFACE a full implementation of the standard for automatic test and measurement systems

16 BIT PARALLEL I/O two 16 bit input or output ports with handshake lines for digital control applications

DUAL RS423 SERIAL INTERFACE for communicating with two additional RS423 or RS232 devices eg printers, plotters, instruments, etc

12 BIT ANALOGUE I/O in development

All the above high performance expansion cards are supplied with high level software for ease of use and a comprehensive user guide.

Take advantage of Intelligent Interfaces' expertise and purchase a complete Archimedes Computer System.

Officially appointed Acorn Scientific Dealer.



Intelligent Interfaces Ltd

43b Wood Street
Stratford-upon-Avon
Warwickshire
CV37 6JQ

Tel: 0789 415875

Telex: 312242 MIDTLX G



New

ON
RELEASE
SOON!

ARCHWAY

Have you spent long hours struggling with the programming complexities of the brilliant Archimedes **WIMPS** system?

With **ARCHWAY** that's all behind you. Now YOU can easily and quickly build multi-window programs with pop-up menus, icons, mouse control, etc. of a professional quality.

ARCHWAY provides tools, bricks, mortar and a basic structure. YOU slot the final bricks into place and add finishing touches.

A comprehensive suite of integrated tools lets you define and edit windows, menus, icons, dialogue boxes, mouse pointers, sprites, fill and line patterns, anti-aliased fonts, short cut keys and much more! You can import files (eg ARM machine code and music editor).

The bricks include an extensive library of functions and procedures providing ready access to many of Archimedes' most powerful features. An in-depth user guide (300+ pages, ring bound) takes you gently step-by-step through a progressive series of program building examples with the emphasis on clarity.

The **ARCHWAY** run-time package together with script shells in BBC BASIC provide the structure.

£79.95

incl. VAT & p/p

The complete system comes on 4*800k discs (3 tools & 1 run-time). You need 1M of RAM to run the tools. One disc drive is sufficient.

SPECIAL INTRODUCTORY OFFER: No charge for upgrade to the extended RISC OS (Arthur 2) version we will release in 1989.

SIMTRON

Programs to help you

4 CLARENCE DRIVE, EAST GRINSTEAD,
WEST SUSSEX RH19 4RZ Telephone (0342) 328188

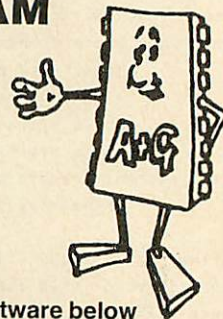
Cheques/POs/official orders or Access/Visa number and expiry date.
24-hour phone for Credit Card orders.

BBC B Sideways RAM

32K Unit £16.00

16K Unit £14.00

- Fool proof fitting - No soldering
- 16K Unit Rom Board Compatible
- RW Protect switch as standard
- Each unit requires one rom socket
- Compatible with tape, disc & econet
- Low power slimline units
- Battery backup made obsolete by Software below



Sideways RAM & Utility Software Pack v4.0

SWR software (requires at least 16K SWR) includes:

- Intelligent menu-driven software for load/save/test/clear SWR-Toolkit
- Automatic rom loader removes need for battery backup-Printer Buffer

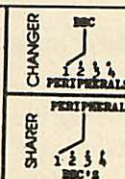
Utility software (no SWR required) includes 25+ useful programs:

- Graph plotter - Damaged disc recovery - Flood Fill - Disc imager
- Char definer - Screen enlarger/flipper/compacter plus much more.

Please state 40/80 track, sold with SWR £3.00, separate £8.00

Switching Boxes

| | User Port | Printer | RS423 |
|--------|-----------|---------|--------|
| 1 to 2 | £24.00 | £24.00 | £14.00 |
| 1 to 3 | £28.00 | £28.00 | £17.00 |
| 1 to 4 | £39.00 | £39.00 | £22.00 |
| 1 to 5 | £44.00 | £44.00 | £27.00 |
| 1 to 6 | £49.00 | £49.00 | £32.00 |



Prices apply to Changers & Sharers. All data lines switched includes all connectors, leads length 1m, longer leads available.

Please send for free catalogue

A&G ELECTRONICS
28 HURSTWOOD AVE,
BEXLEY,
KENT, DA5 3PH
(MAIL ORDER ONLY)

**TRADE & SCHOOL
DISCOUNTS AVAILABLE**

ALL PRICES INCLUSIVE

Tel: 0322 521949

AMT ELECTRONICS

TELETEXT ADAPTERS

BBC B, B+ AND MASTER TELETEXT ADAPTER

A Teletext Adapter gives you access to a vast database of FREE information which can be displayed, printed, stored on disc or processed by other programs. There are no phone or connection charges and information is available 24 hours a day. The adapter is housed in a beige disc drive case with a 13-amp plug style power supply and connects to the user port. Controlling software is supplied on 2 16K ROMs (or 1 32K ROM for Master users; please state which is required). This is the very latest in Teletext technology, from the designers of the original Teletext adapter and should not be compared with units which have been on the market for some years.

FEATURES:

- * Advanced design can search and store 4 pages simultaneously in the onboard RAM
- * Channel frequency data is stored onboard in EEPROM - no need to load from tape or disc
- * Connects to user port via new onboard high speed data transfer interface
- * User - Friendly terminal software which includes many new commands for access from BASIC programs
- * FREE software transmitted by BBC2 which is updated weekly
- * No hardware limitations - can access any public teletext service on any number of channels

Teletext adapter complete with FREE POWER SUPPLY, connecting leads and software on ROM: £94.95

Master Compact Teletext Adapter: As above with joystick port connector: £96.95

Teletext Adapter with video in-out connectors and software allowing mode 7 text and graphics to be displayed over a television picture. Useful for captioning video recordings etc.: £104.95

RS232 TELETEXT ADAPTER

A teletext adapter which may be connected to any computer with an RS232 interface and a terminal program capable of supporting Prestel graphics. This unit acts as a 'teletext modem', pages being selected and displayed by the user's own terminal program. Escape code commands are also included to allow the adapter to be driven by the user's own programs.

RS232 Teletext Adapter with Power supply and 25 way D connector lead: £109.45

EP TURBO EPROM PROGRAMMER

A high speed programmer for all 2764-27256 NMOS and CMOS EPROMs. The unit is under complete software control, the EPROM type and programming voltage are selected using the user - friendly menu driven software supplied. EPROMs can be dumped to disc, read from disc, programmed, verified and edited. The ROM can then be searched for key words or copied to SWR. Other sideways ROMs in the computer can be copied to disc or to the programmers buffer. Connects to the User port via a 20 way cable.

EPROM programmer including cable, software on ROM and FREE 27128 EPROM. Everything you need to program your first EPROM!: £24.95

MASTER AUTOCOPY CARTRIDGE

The Autocopy cartridge will halt almost any program at any time at the press of the cartridge's button and execute one of a number of possible tasks previously determined by the user including:

- * Save the computers entire memory
- * execute an OSCLI command selected by the user
- * freeze/thaw at any point
- * dump the screen to printer or disc
- * execute a program stored in the cartridge's onboard RAM by the user (up to 256 bytes)

Selection is made using a friendly menu driven routine call by a * command.

Cartridge with manual: £26.90

USER PORT SWITCH

Allows two devices (eg: Teletext adapter and EPROM programmer) to be connected to the User port at the same time and selected by toggling a switch. Saves wear and possible damage to cables and your computer.

User port switch with connecting cable: £19.95

MASTERSPEECH CARTRIDGE

Simply plugs into the Master's cartridge socket to provide an unlimited speech vocabulary using allophones (word segments). Supplied with onboard 16K driver ROM and 500+ word dictionary (new words can be added by the user).

Master Speech cartridge with manual: £29.95

Coming soon - Low cost Video Digitiser

ORDER FORM

To order please fill in and send with cheque/p.o./order to: AMT ELECTRONICS STONECROFT DRURIDGE BAY MORPETH NORTHUMBERLAND NE61 5EF
Telephone: 0670 761422

| | | |
|-----|-----------------------------|------------------------------|
| Qty | — BBC teletext adapters | @ £109.19 inc. VAT & P&P ea. |
| Qty | — Compact teletext adapters | @ £111.49 inc. VAT & P&P ea. |
| Qty | — Video teletext adapters | @ £120.69 inc. VAT & P&P ea. |
| Qty | — Turbo EPROM programmers | @ £28.69 inc. VAT & P&P ea. |
| Qty | — Autocopy cartridges | @ £30.93 inc. VAT & P&P ea. |
| Qty | — User port switches | @ £22.94 inc. VAT & P&P ea. |
| Qty | — RS232 teletext adapters | @ £125.86 inc. VAT & P&P ea. |
| Qty | — MasterSpeech cartridges | @ £34.44 inc. VAT & P&P ea. |

NAME

ADDRESS

.....

.....

PHONE POSTCODE

3 1/2"

BENCHMARK BRANDED

DS/DD 135TPI
100% Certified
Lifetime Guarantee

| | |
|-----|------|
| 10 | £12 |
| 20 | £20 |
| 50 | £44 |
| 100 | £84 |
| 200 | £160 |
| 500 | £388 |

5 1/4"

BENCHMARK BRANDED

DS/DD 48TPI
100% Certified
Lifetime Guarantee

| | |
|------|------|
| 25 | £10 |
| 50 | £18 |
| 100 | £34 |
| 200 | £61 |
| 500 | £146 |
| 1000 | £279 |

3 1/2" DISK BOXES

| | |
|--|-------|
| 10 Capacity Library Case (per pack of 6) | £5.70 |
| 40 Capacity Lockable Box | £5.25 |
| 80 Capacity Lockable Box | £7.25 |

5 1/4" DISK BOXES

| | |
|--|-------|
| 10 Capacity Library Case (per pack of 6) | £5.70 |
| 50 Capacity Lockable Box | £5.25 |
| 100 Capacity Lockable Box | £7.25 |
| 140 Capacity Lockable Box | £8.25 |

DATA SWITCH BOXES

| | |
|----------------------------|--------|
| 2 Way RS232, 25 Way D Type | £19.50 |
| 2 Way Cent, 36 Way | £21.50 |
| 3 Way RS232 25 Way D Type | £24.00 |
| 3 Way Cent, 36 Way | £26.00 |
| 4 Way RS232 25 Way D Type | £28.50 |
| 4 Way Cent, 36 Way | £29.50 |
| 2 Way X Over, RS232 | £24.00 |
| 2 Way X Over, Cent | £26.00 |

PRINTER RIBBONS

| | |
|--------------------------------|-------|
| EXAMPLES: | |
| Epson MX80/FX80 | £2.96 |
| Epson LQ800 | £3.40 |
| Panasonic 1080/90 | £3.93 |
| Call for prices on all ribbons | |

PRINTER STANDS

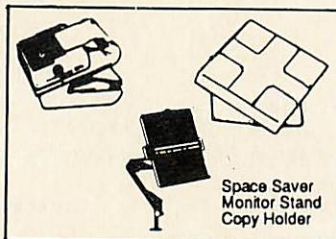
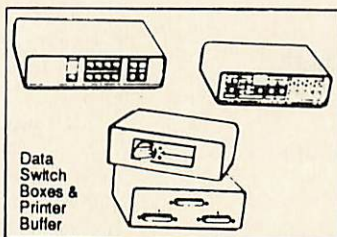
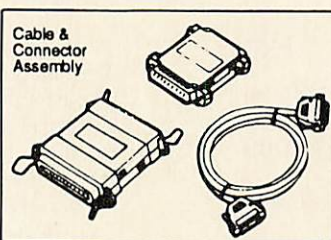
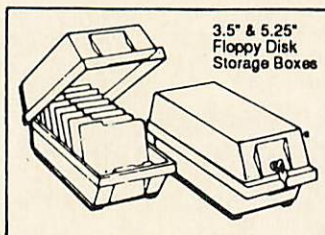
| | |
|-----------------------------|--------|
| 132 Column Space Saver | £28.95 |
| 80 Column Space Saver | £24.95 |
| 80 Column Standard Plastic | £13.99 |
| 80 Column Moulded with Tray | £18.00 |

ACCESSORIES

| | |
|-----------------------------------|--------|
| Tilt & Turn Monitor Stand 12" | £10.75 |
| Tilt & Turn Monitor Stand 14" | £12.50 |
| 5.25" Mailer (Plastic) Pack of 10 | £6.50 |

DE-LUX 5.25" CLEANING KIT

| | |
|--------------------|--------|
| C476 In Carry Case | £16.50 |
|--------------------|--------|



3 1/2" BOX AND DISKS OFFER

| | |
|--|--------|
| 20 3.5" DS/DD Disks Plus 40 Capacity box | £24.00 |
| 40 3.5" DS/DD Disks Plus 40 Capacity box | £38.00 |
| 50 3.5" DS/DD Disks Plus 80 Capacity box | £48.00 |
| All boxes have lock and two keys | |

5 1/4" BOX AND DISKS OFFER

| | |
|--|--------|
| 25 5.25" DS 48TPI Disks Plus 100 Capacity box | £16.00 |
| 50 5.25" DS 48TPI Disks Plus 100 Capacity box | £24.00 |
| 100 5.25" DS 48TPI Disks Plus 100 Capacity box | £40.00 |
| All boxes have lock and two keys | |

DATA CABLES

| | |
|----------------------------|-------|
| 25 Way M - 36 Way IBM Type | £7.95 |
| 25 Way M - 25 Way M RS232 | £7.95 |
| 36 Way M - 36 Way M Cent | £7.95 |
| All 6ft Long | |

GENDER CHANGER

| | |
|-----------------------------|-------|
| 25 Way F to 25 Way 1 to 1 | £5.25 |
| 25 Way F to 25 Way M 3 to 1 | £7.50 |
| 25 Way F to 25 Way M 2 to 2 | £7.50 |
| 25 Way F to 25 Way M 1 to 3 | £7.50 |

PRINTER BUFFERS

| | |
|-------------------------|---------|
| PB64-1 1 IN - 1 OUT 64K | £80.00 |
| PB64-2 1 IN 2 OUT 64K | £99.00 |
| PB256-1 1 IN 1 OUT 256K | £150.00 |
| PB256-2 1 IN 2 OUT 256K | £175.00 |

COPY HOLDERS

| | |
|---------------------|--------|
| A4 Angle Poise Type | £13.70 |
| A4 Desk Top Type | £8.90 |

MOUSE MATS ETC.

| | |
|--------------------|-------|
| Rigid Double Sided | £4.50 |
| Semi-Rigid | £4.00 |
| Mouse House | £4.00 |

DISK DRIVE HEAD CLEANERS

| | |
|--|-------|
| 3.5" Head Cleaner + Fluid | £3.50 |
| 5.25" Head Cleaner + Fluid | £2.50 |
| Price only if bought with other products | |

| DISKS | DISKS | DISKS | DISKS | DISKS | DISKS | DISKS | DISKS | DISKS | DISKS |
|--------------------|-------|--------|-------|--------|-------|--------|-------|---------|-------|
| 5.25" SS/DD 48TPI | 25 | £9.00 | 50 | £16.00 | 100 | £30.00 | 500 | £148.00 | |
| 5.25" DS/DD 96TPI | 25 | £11.00 | 50 | £20.00 | 100 | £36.00 | 500 | £176.00 | |
| 5.25" DS/HD 1.6Meg | 25 | £29.00 | 50 | £49.00 | 100 | £83.00 | 500 | £348.00 | |

ALL DISKS INCLUDE ENVELOPES AND USER LABEL SETS

ALL PRICES INCLUDE VAT & P&P. UK & BFPO ORDERS ONLY

**M
C
S**

TO ORDER BY PHONE POST 0597-87784 BY Send cheques/P.O.s made payable to MANOR COURT SUPPLIES LTD

Manor Court Supplies Ltd

9am - 6pm MON-FRI
Telephone: 0597 87 792

DEPT AU1, GLEN CELYN HOUSE, PENYBONT, LLANDRINDOD WELLS, POWYS, LD1 5SY

EDUCATION AND GOVERNMENT ORDERS WELCOME

SHOOTING GALLERY

Taking pictures of your favourite screens can be quite a tricky business. We have all the advice you need to be camera ready!

Graham Bell

Taking photographs of the computer screen is an important chore that needs to be done every month on *Acorn User*. And even with relatively simple equipment, it can be done quite well. You need no more than a camera on which you can control the shutter speed and aperture, and a really solid place to put your camera and monitor on. The method is exactly the same for colour, monochrome monitors or TVs, and for print or slide film.

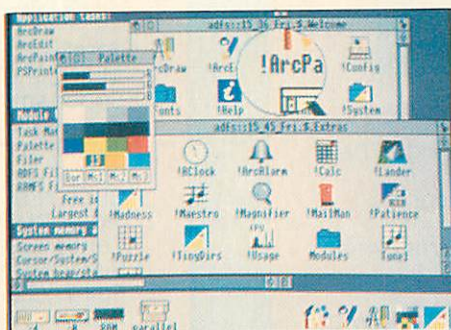
The major problem in taking a picture of any sort of TV or monitor screen is that, even ignoring any movement on the screen, the picture is not really static, because it is 'refreshed', or redrawn, 50 times every second. In the case of a TV, half the picture is refreshed 25 times a second. It is this that causes the flickering you often see on a screen – particularly out of the corner of your eye, or when computer screens are shown on a TV programme.

The computer's picture is drawn onto the screen by a moving dot of 'light' – it runs across the screen 256 times, gradually moving down, and it takes nearly the whole 50th of a second to run down the screen. The screen glows long enough after the dot has passed for you to see a steady picture, but it gets quite dull again before the dot comes around next time.

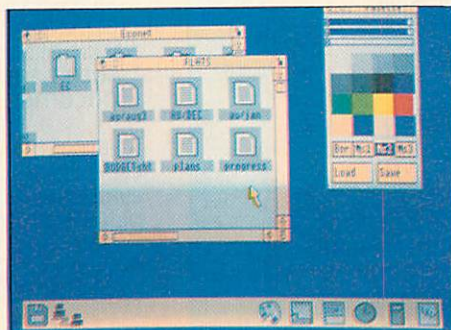
Many 'instamatic' or disc cameras take their pictures in a 30th or 60th of a second, so these can be ruled out for screen shots. As the shutter is only open for, say, a 60th of a second, not all the screen is 'refreshed' during that time. Part of it appears bright, but part appears dull because it wasn't redrawn while the shutter was open: the result is usually a picture with a black bar across it.



Underexposed: too small an aperture



Overexposed: aperture too wide



Dark bar due to too short an exposure time

So, you need a camera on which you can control the shutter speed. To get a really clear picture, a speed as slow as half a second is best, and down to about two seconds. If you use a speed slower than about two seconds, then funny things happen – the colours can change, for

example. Professional photographers sometimes call this 'reciprocity failure'.

The remaining problem is that of how wide to open the aperture. If you have an exposure meter, then you can use that to check on the exposure. But many cameras have a built-in light meter, and you can often use that to work out how wide to open the aperture.

The way to do this is to set your monitor to display the picture much as you would use it normally, with the contrast fairly high and the brightness turned down to be comfortable enough to watch. Then get a completely white picture: the easiest way is to select mode 0, then type:

VDU 19, 0, 7; 0;

It is best to do this in a darkened room – you'll certainly need a blackout when you take your pictures.

Now point your camera directly at the screen, and use the meter to measure how much light is given off. You should set the shutter speed to say, half of a second beforehand, and also set the film type if you need to – some cameras do this automatically. It doesn't really matter how close you put the camera to the screen – a few inches away is fine.

With most monitors, the camera will tell you what it needs, say f16 to expose the film properly. Now this is for white; really the camera expects to be pointing at an average grey scene when you do this. So now you double the aperture, so that white will be 'overexposed' – f16 doubles to f11, not f8 or f3.2.

Now you have an 'ideal' set-up – film speed, shutter speed and aperture. You can fiddle with the film speed, the aperture and the shutter speed until you get a value that suits you. For example, doubling the film speed from 100ASA to

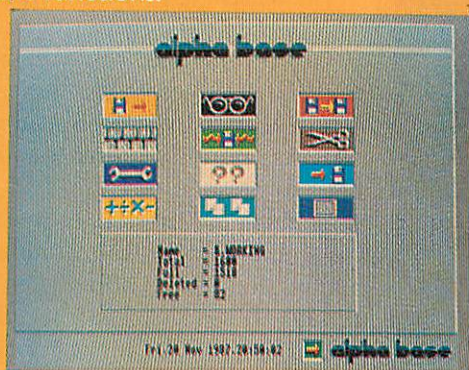
Archimedes

HARNESS THE POWER

Alpha-Base

£49.95

Alpha-Base is the successor to **Beta-Base**, the top selling database for the BBC micro. Alpha-Base really does 'HARNESS THE POWER' of the Archimedes. As with all Clares products we have made **Alpha-Base** powerful but easy to use. You can be using a database within 5 minutes of receiving the program - that's easy. But don't be fooled, you do not lose any functions or power. Here are just some of the functions:



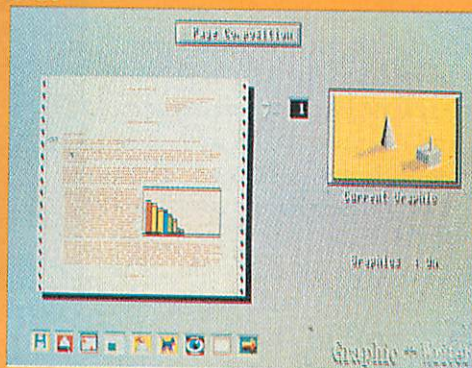
- * WIMP based using icons and mouse
- * Hard disc compatible - massive files
- * Free format screens with on line editing of field order
- * Upto 400 fields & 27600 chars per record
- * Upto 2.14 billion records per file !!!
- * Multiple display, entry and printer forms can be used with each file
- * Fast search by fields or record
- * Plain English entry of search & sort criteria with many inbuilt functions
- * Five data types including formulae
- * Calculation facilities with inbuilt min, max, average, age etc
- * Comprehensive print options inc labels
- * Validation on each field if required
- * Transfer fields from one file to another
- * Password security if required
- * Data stored on disc so computer failure will not result in loss of the data

If you want a powerful database that you can boot up and run within 5 minutes then buy **Alpha-Base** now. Absolutely no programming skills required.

Graphic Writer

£29.95

Graphic Writer, formerly **Image Writer**, is a sophisticated WIMP based word processor with an inbuilt graphics editor. It can be used as a standard word processor or graphics can be included to provide diagrams, graphs etc within your document. Graphics can even be imported from **ARTISAN**



- * Totally icon driven from menus
- * Multiple documents in memory, upto 512k
- * Super smooth scrolling
- * Fast search & replace
- * Justify centre etc
- * Text styles give plain, bold, italic, underlined, subscript, superscript or combinations of these eg bold italic underlined subscript.
- * Centered and Temporary text styles
- * Block operations - move, copy, delete and recall
- * Full WYSIWYG preview
- * Graphics editor
- * Page format controls page length, headers, footers, pad and pound characters.
- * Page Composition allows placing of graphics, mini preview etc
- * Multiple print out options
- * Auto page numbering even through multiple documents

To create a document with **Graphic Writer** you type in your text, using the many text styles available, leave room for the graphics and then place the graphics using **Page Composition**. It's simple and easy to use. You can have up to 14 documents in memory on a 310, that's equivalent to about 220 pages of A4 text.

See what the magazines say:

the scrolling is unbelievably smooth... I can highly recommend this excellent product as being **THE** word processor for the Archimedes

MICRO USER April 1988

excellent value... bowled over by its stunning use of graphics.

RISC USER December 1987



98 Middlewich Rd
Northwich
Cheshire CW9 7DA
Tel: 0606 48511

ALL PRICES INCLUDE
VAT and P+P
OVERSEAS ORDERS
ADD £4



DON'T FORGET, YOU CAN ORDER WITH ACCESS CARD TOO!

200ASA could allow you to halve the shutter speed (say from one to half a second), or halve the aperture (from f8 to f11), but not both. And it works backwards too – using a half-speed film would entail doubling the shutter speed or doubling the aperture. There are scales in the diagram to show you how to do this. In general, slower films can show more fine detail, with less 'grain'.

But all normal films can show much more detail than there is on the screen anyway, so there is no good reason for not using a fast type, say 200ASA. Smaller apertures are better, because it keeps more of the picture in focus. And you should aim to keep the shutter speed between a quarter and two seconds.

Typical values for my camera and monitor are f11 at one second for 200ASA film, but it will depend on your monitor. If you haven't got a camera that can measure the amount of light it needs, then use these typical values. Try a few pictures at the end of a roll of film, and adjust a bit next time if they aren't right.

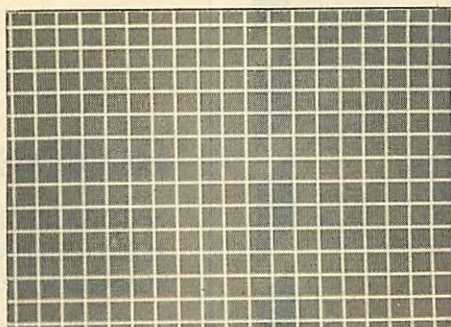
Now set up your camera about a metre from the monitor, at the same height and pointing directly into the centre of the screen. This is vital to the photo; if you get the camera off-centre, the edges of the screen will look very curved in the picture. If you are lucky enough to possess one, a tripod is the best way to do this, remembering you have to keep the camera still for about a second – you certainly can't hold it by hand. But if your monitor is on a table, a small pile of books might be enough to keep the camera still and raise it to the right height. Some kind of rubbery mat under the camera will help too. Obviously, the computer screen should take up nearly all of the viewfinder, and you should focus the picture carefully.

When you take the picture, make sure the room is dark, otherwise the other lights shining on the screen will reflect into the camera. Make sure you have the picture you want on the screen and in the viewfinder, and use a cable release to set off the shutter. This minimises the risk of the camera shaking. But again, if you don't have one, then a timer will work as well. Press it, and the delay will allow any movement of the camera to die away.

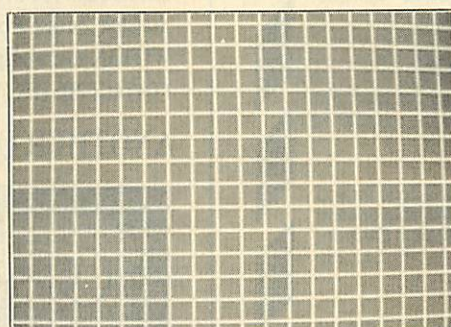
And to make sure you get the picture right, it might be wise to take three versions: one at your 'ideal' speed settings, one overexposed with a slower shutter speed or wider aperture, and one

underexposed with a faster shutter or narrower aperture. It is best to double and halve the aperture or shutter speed for these 'bracketing' shots – tiny adjustments make no real difference to the final photo.

If you have a camera with interchangeable lenses, or you have a zoom lens, then you can make the final refinement yourself. Because monitor screens are curved, screenshots tend to have curved edges. Take a look. Put your face really close to a monitor – it looks very curved. Now look at it from further away, and the curvature is less noticeable. Using a long-focus 'telephoto'



Flat effect of telephoto lens



Bulging caused by wide-angle lens

lens helps to flatten out the curvature, and makes the edges of the final picture much straighter.

So a 135mm lens is better than the standard 50mm lens that most cameras of this sort come with. If you have a zoom lens, set it to its longest possible setting. It may mean you have to set the camera further away from the screen than you would with a normal lens – the distance to aim for is where the screen of the monitor fills almost all of the camera's viewfinder. The edges of the monitor should be visible around the edge of the frame.

Now you have all the advice you need to take good screen pictures – as good as any that appear in *Acorn User*. The long dark winter nights are an ideal opportunity to capture your best screen displays on film.

TOP TIPS

- Keeping the camera still is the most important thing. Getting it in focus won't mean a thing if the camera shakes
- Get the room as dark as possible – draw the curtains to take your photos
- Screen saving software like *Snatch* and *Replay* is invaluable for many programs – a still picture is vital
- Taking pictures of some commercial programs is difficult, particularly games, because of the animation. If you can, press the pause button
- Some games can't be paused – but sometimes the Break key can work. Press it and hold it down until you have taken the picture
- Avoid pure black backgrounds and white text – it tends to blur a bit. A blue background is easier to photograph
- If a black background is unavoidable, then turn the contrast knob on the monitor down a little to prevent any white text appearing blurred
- Once you have got a few pictures right, make a mark on your monitor where the contrast and brightness buttons are set, so you can always use the same settings
- A few people have auto-focus cameras. Some of these (in particular the Canon EOS) seem to work well focusing on a computer screen – it is worth trying if you have one of these cameras
- Colour slide film gives the best results for publication, but print film is easier for your own use. *Acorn User* usually uses Ektachrome 100
- Below is a table of 'ideal' film ASA values, shutter times and lens apertures. It shows, for example, that for 200ASA film, a one second exposure at f8 or two seconds at f11 are best. Make up a table like this for your own camera and monitor

| Film | Shutter | Lens |
|------|---------|------|
| 100 | 1S | f5.6 |
| | 2S | f8 |
| 200 | 1S | f11 |
| | 2S | |
| 400 | 1S | f16 |
| | 2S | |

CARE ELECTRONICS

800 ST. ALBANS ROAD, GARSTON, WATFORD,
HERTS. WD2 6NL TEL: 0923 672102

For your convenience first price Ex VAT, second Inc VAT

CARE MASTER SMART CARTRIDGE

At the press of a button halt any program running and execute any one of a host of useful built in, or user defined functions and once completed will return to the program and continue. Built in functions include: Tape to Disc, Screen Dump to Disc or Printer, Sound On/Off, Autosave and much more £30.00 £34.50c

CARE 32K BATTERY BACKED RAM CARTRIDGE

For use as a 32k Sideways Ram or plug Spellmaster in and have User Dictionary 16K (Battery Backed) all on the same cartridge. With White Protect Switch and a battery life of approx 10 years £35.00 £40.25

CARE MASTER ROM CARTRIDGES

ALSO SUITABLE FOR INTERWORD AND SPELL MASTER

| | | |
|---|--------|---------|
| Standard Cart takes two Roms | £9.00 | £10.35c |
| Standard Cart with Single Zip | £13.40 | £15.41c |
| Standard Cart with Two Zips | £17.60 | £20.24c |
| Quad Cart takes Four Roms | £14.00 | £16.10c |
| Cartridge for Two 32K Roms | £12.00 | £13.80c |
| Master Rom Extender for using BBC B Cartridges on the Master-Ideal for schools | £13.00 | £14.95c |
| Morley AA (Internal) Rom Board | £40.00 | £46.00c |

BBC B ROM CARTRIDGE SYSTEM

| | | |
|------------------------------------|--------|---------|
| BBC B Low Profile Rom System | £12.00 | £13.80c |
| BBC B Spare Cartridge | £3.00 | £3.45c |

BBC B Cartridges can be used on the Master with the master Rom Extender - See above

EPROM PROGRAMMER V2

Programs 8K, 16K, 32K CMOS or NMOS devices voltage selectable 21V or 12.5V. Complete with comprehensive software which includes Rom management system, plugs into the user port £30.00 £34.50c

SPECIAL OFFER MORLEY TELETXT ADAPTOR

Comes with 16K ATS Rom, 16K Utilities Rom, Two Manuals and utilities Disc at the unbeatable price of £84.80 £97.52

LABELMASTER

Uses a variety of print styles and sizes. All formatting is done for you and can accept different label sizes. A comprehensive label printing program that is easy to use for BBC B, Master, Compact and Electron. Please state model when ordering £15.00 £17.25c

CARE PRINTER BUFFER

User definable for BBC B, master on Rom or Disc £14.00 £16.10c

MASTERCOPY

If you need to copy between DFS and ADFS and DFS. MCOPIY is it £11.26 £12.95c

PRINTER SWITCHERS

| | | |
|--|---------|----------|
| Two Printers to one computer | £30.00 | £34.50d |
| Four computers to one printer | £50.00 | £57.50d |
| Please note that all the above units switch all lines, are suitable for all types of printers and computers using Centronics Parallel and INCLUDE LEAD | | |
| Six computers to one printer | £71.00 | £81.65d |
| Four to one automatic switcher | £102.00 | £117.30d |
| Eight to one automatic switcher | £128.00 | £147.00d |
| For advice or a quote on your installation please phone | | |
| User port switcher 2 to 1 off | £33.00 | £37.95d |
| User port switcher 6 to 1 off | £72.00 | £82.80d |
| RS423 Serial Switcher 2 to 1 | £20.20 | £23.23d |

CARE READY MADE LEADS RANGE

| | | |
|--|--------|---------|
| BBC/Master RGB-7 Pin Hitachi | £6.20 | £7.13c |
| BBC/Master RGB-7 Pin Ferguson | £6.20 | £7.13c |
| Centronics to Centronics Printer | £11.00 | £12.65c |
| User Port Extension lead 0.5M | £9.00 | £10.35c |
| 1MHz Bus Extension lead 0.3M | £10.40 | £11.96c |

Wide range of leads in stock - please phone

Government & Educational orders welcome. How to order: Enclose your cheque or P/Order made payable to CARE ELECTRONICS.
Access or Visa cards welcome. Please allow 7 days for delivery.
Please add Post & Packing - a=£10.35; b=£5.75; c=£1.15; d=£2.30



THE PUBLISHER



A NO-NONSENSE, NO-GIMMICK DESKTOP PUBLISHING SYSTEM

- ★ INTEGRATES WITH YOUR EXISTING WORDPROCESSOR
- ★ SIMPLE BUT POWERFUL PAGE DESCRIPTION COMMANDS
- ★ ON-SCREEN PREVIEW FROM WORDWISE, VIEW & INTER-WORD

THE PUBLISHER is a single, massive 64K ROM which holds the controlling software and 16 FONTS. Being ROM based, THE PUBLISHER is instantly available, no disc access required. PREPARE, PREVIEW and PRINT all from WITHIN your wordprocessor £39 + £1 P&P + VAT = £46 INC. CONTACT PMS FOR FULL DETAILS, SCREEN-SHOT AND SAMPLE PRINTOUT

ANOTHER QUALITY PRODUCT FROM PMS



YOUR WISH... ..IS MY COMMAND

"stunning", "superb", "well written"...
unanimously praised by reviewers

The PROFESSIONAL "POP-UP" for the
BBC Micro.

ADDRESS BOOK, CALCULATOR,
CALENDAR, PHONE BOOK,
NOTEPAD, all you need to get organised!

Battery-backed
£79.35 + £2 P&P

Disk/ROM based
GENIE Junior
£25 + £1 P&P

GENIE Watch RTC
£29.90 + £1 P&P

Utilities disk
£9.95 + £1 P&P

(PRICES INC VAT)



Permanent Memory Systems
38 MOUNT CAMERON DRIVE
EAST KILBRIDE G74 2ES
SCOTLAND

03552-32796



(24 hour)

A WORLD OF YOUR OWN

Use our programs to generate random maps of mysterious planets, islands and mazes to use in your adventures

Peter Voke

Many games, including some adventures, make use of maps with at least an element of randomness in them. But you have to be careful in relying on random numbers, for they tend to produce rubbish – in a way that is what they are designed to do.

Three programs in this month's yellow pages set out to create maps and scenes with at least an element of randomness. The random number generator in the Basic interpreter inside the BBC does not produce completely random numbers. Instead it produces a sequence of numbers that are related in a complex way, too subtle to detect the connection. For this reason its proper title is 'pseudo-random number generator'. To see this, a very simple program is sufficient. Switch to Mode 0 (if you have a Master, make sure you aren't in a shadow mode) and try:

```
FOR I%=&3000 TO &8000:
```

```
?I%=RND(256):NEXT
```

This will produce something on the screen that does look remarkably random. Now try the following statement:

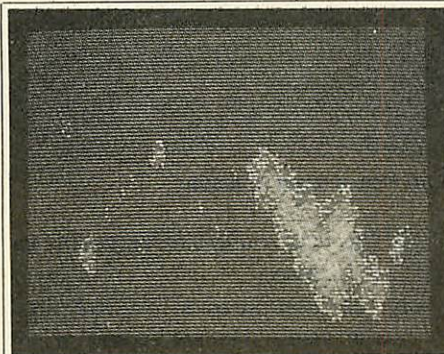
```
FOR I%=&3000 TO &8000:
```

```
A%=RND(-TIME):
```

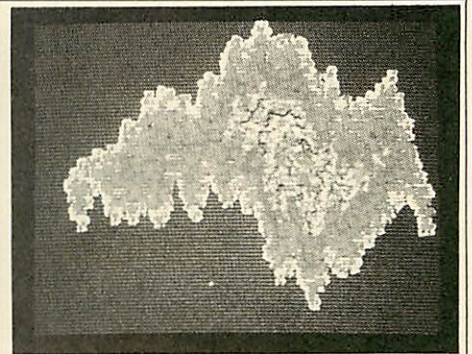
```
?I%=RND(256):NEXT
```

You should see why the common habit of re-initialising the random number generator using the TIME has to be used carefully; the random number generator is not totally random. The 'seed' (the negative number in brackets) totally controls the sequence of numbers you will get.

Use the random number generator in the wrong way, and you either get something that is far too random or something that is not random enough. Listing 1 is a careful compromise between



Random numbers produce an archipelago ...



... or a single island map

these two pitfalls. It draws maps of imaginary planets, based on random numbers. At the beginning, you are asked to give a seed number. This allows you some control, and if you remember the seed number of a particular map, you can reproduce it by giving the same seed number again. If you want a genuinely 'random' choice, enter 0 for the seed.

The maps are remarkably pretty, and look realistic mainly because the random element in them is tightly controlled. Nevertheless, you will not get precisely the same map with any two distinct seed numbers. On my computer (a BBC with Basic 2) seed numbers 111111 or 1717 will give what look like large volcanic islands with very realistic calderas. Seed 54321 gives one large continent, while 13 or 11 give smaller islands dotted about in an archipelago. Seeds 12 and 9875 give mountain chains, and many others, like 2468, give islands linked or divided by narrow straits.

You may already be wondering where you made a mistake typing the program. But if you are running on anything other than a BBC with issue 2 Basic, the results of running the map program will be different, since the random number

generator works in a different way on a Master, Compact or Electron – to say nothing of the Archimedes. On these machines you will have to find the things described by trial and error.

These maps seem to conjure up possibilities for games of all sorts, with their bays, valleys, mountain ranges, rivers, lakes and peninsulas. The program is very short at less than 50 lines, and could be included as a procedure in another program, such as one running an adventure, without too much difficulty.

Once a map has finished, you press any alphabet key to continue to another map. Alternatively, try pressing the keys 0, 1, 2 or 3. These will cycle the four colours used in the mode 1 screen through all the possibilities: red, green, yellow, blue, magenta, cyan, white and black.

By setting up particular colours you can change your maps to get an eerie, alien feel, as if they were maps of waterless planets with unusual surface chemistries. By making the seas red, one gets a distinctly Martian feel, as if highlands are rising out of plains of red dust. Black 'seas' give the feeling of an airless moon, while cyan or green ones

perhaps conjure up visions of oceans of methane or ammonia.

This brings us to the next program, which was inspired by these alien maps and was designed to bring the strange planets and moons even more to life. Listing 2 is designed to produce views typical of various planets. As with the first program, you need to see these on a colour monitor or TV. Randomness is used extensively, though the basic layout of the scene is broadly the same in each case.

One important point if you are entering this program at the keyboard: the DATA statements are referred to by a calculated RESTORE. This is not a common feature of Basic programs, and it means that the precise line numbers must be reproduced for all the lines of DATA. They must start at the right line number and increment by 10 as you go. Be very careful before you renumber this program; you could wreck the relationship needed between the DATA and RESTORE statements.

Once you have the program running, you will be presented with a choice of which planet type to view. This is really just a fanciful way of choosing various colour combinations, though they do correspond to my personal idea of planets that are similar to Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune and Pluto, for choices 1 to 9 respectively.

The subtypes 1 to 4 choose certain particular colour combinations within the planet class, changing the colour of the sky, mountains, sun or ground. For the gas giant planets Jupiter, Saturn, Uranus and Neptune you will then find you are given a choice of moon type, since the view you will be shown is supposed to be from the surface of a moon, with the gas giant in the background.

In the data statements, some comments are included to indicate roughly what type of moon I had in mind in choosing the colours — though my chemistry is far from good enough to guarantee accuracy! Methane just sounds bluish to me: I don't know what colour seas of methane ought to be.

Having chosen planet and moon types, various options are available for the way the surface is depicted. The choice here is entirely up to you, though the 'sea' option gives a rather boringly flat view, with no mountains in the background;



View from a moon of Jupiter

this is the main difference between 'sea' and 'flat' surfaces.

Try out the program as you like. Here are a few views that are typical of the best you get on a BBC running Basic 2: Seed 4455, Saturn subtype 1, moon 2, flat unbroken terrain; seed 13, Earth subtype 1, contoured unbroken terrain; seed 1, Pluto subtype 2, contoured broken terrain; seed 54321, Neptune subtype 4, moon 2 flat receding. If you have a Master, try seeds 6 or 123 instead.

One of the extraordinary things about programs based on the random number generator is the feeling that you have a program that can produce an (almost) infinite variety of outputs. The map program is really very short, and the views program not much longer. Yet the amount of information contained in the total number of maps or views is immense.

The secret lies with the random number generator, which effectively passes through a sequence of four-byte numbers in an apparently random order, giving the next number in sequence each time it is called. The order is not truly random, but the way the generator goes from one number to the next is sufficiently complex that you cannot see any connection. The total number of positive four-byte integers is 2147483650, and the random number generator goes through all of these before it starts to repeat itself. So that is how many different maps and

scenes there are in the BBC micro: over two billion for each choice of colour and terrain. Not quite an infinite number of possible outputs, but near enough.

Listing 3 is a small adventure program based on random mazes. The way the mazes are produced is a little subtle, though. It is done by procedure PROCm, and if all you want is a procedure to create 16 by 16 mazes, you can extract PROCm and the procedures it uses for the purpose. The mazes have the property that each of the 256 locations is connected to every other by one and only one route.

If you have a Master 128, or any other type of computer with PAGE normally at &1100 or lower, you should have no problems getting the program running. If your machine does not have shadow memory, and PAGE is normally at &1900 or above, you are likely to run out of memory. Save the program, reset PAGE to &1100, and then CHAIN it; this allows enough room for the arrays.

The game is set up so that each maze is a 'level' in an infinitely tall castle. You can go up or down levels at the left-hand top or bottom corners of each maze (north-west or south-west), which are marked u or d as appropriate. You start at level 500 and can go down to level one or up indefinitely. This may be a short program, but it produces a very large maze! The maze is 'grown' from randomly selected seed positions as you watch it

being drawn; the arrow symbol put in at the end represents your initial position and orientation.

Once the maze for the level you are on has been drawn, press any key and you will find yourself in a standard three-dimensional maze game with coloured walls. Use any key to move forward one position. The number keys from 2 to 9 move forward from twice to nine times as far, if you're in a hurry. The left and right cursor keys make you turn left or right, while the up and down cursor keys are used when you reach the corners that connect with the level above or below.

If you get lost, press the Q key to recall the map. The arrow indicates your position and orientation. At every point in the three-dimensional maze your compass direction is shown at the top, along with the score.

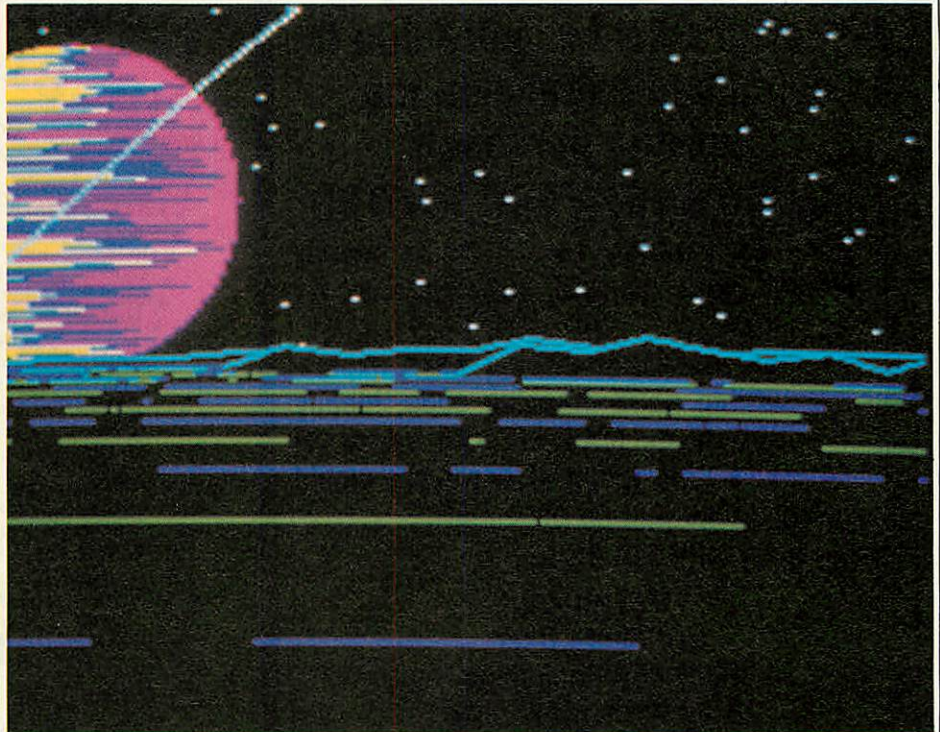
The object of the adventure, of course, is to get as high a score as possible. You have to look for treasure, such as chains, coins, daggers, jewels, pearls, crowns and gold. They score from one to seven points respectively. You have to be standing right on top of the treasure to see it – it appears on the screen, and the name of the treasure appears under the compass heading and score so you know what you have found: you pick up the treasure using the TAB key.

Each maze is actually stored in the form of a bit pattern in page &900 to &9FF. Since the computer clearly cannot store an infinite number of mazes (or even two billion odd), the maze for each level is regenerated as you move on to that level, overwriting the maze for the previous level. The random number generator is reset using the level number as a seed, so that on level 500 you always have the same arrangement of walls and passages, while other levels have their own different but consistent arrangements.

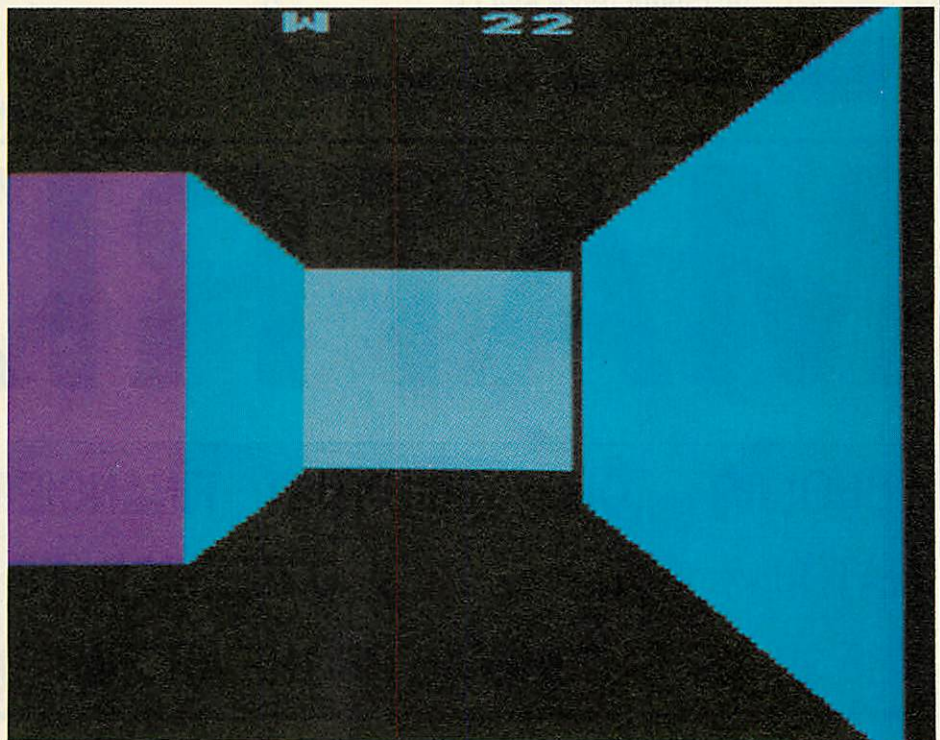
Again, the mazes produced by a Master are different from those on the BBC. They seem to be distinctly easier, though with fewer places to put treasure. The treasure is always right at the end of a dead-end passage, or in an alcove.

If you want to make the game more interesting, add more objects after line 1350. You will also need to increase the argument of the RND() function in line 1260 to the total number of different objects you now have, and change the ON R% GOSUB in the following line to point to your new object subroutines.

ACORN USER JANUARY 1989



Saturn's rings seen edge-on



Navigate the almost infinite 3D maze

This is easy enough if you have shadow memory on your computer. If you don't watch out for the No Room error message – your program is too big.

Notice the odd way of combining V%, the level number, and I% and J%, which are your co-ordinates, in line 1240. I found that if I just used $-V\% - I\% - J\%$, the random number generator produced the number 1 rather more often than I wanted it to. By

combining V%, I% and J% multiplied by fairly large prime numbers, I obtained a seemingly much more random behaviour, yet still such that if gold was found in a particular place on a particular level once, it always would be there.

The overall effect is of a real castle, full of surprises yet predictable once you know where things are. In this adventure, you will run out of patience long before you run out of new passages to explore.

A leading company in the leisure field require due to continued expansion the following personell

TRAINEE SOFTWARE WRITER

To work on exciting new projects mainly concerned with control applications for compact disc.

The ideal candidate should have experience in writing 6502 machine code, ideally for the BBC B or MASTER 128 series of computers. A knowledge of hardware would be an advantage but not essential

Please reply with full CV to:

**Mr Linfoot
C/O Acorn User
Redwood Publishing
20-26 Brunswick Place
London N1 6DJ
or Phone 0924 40411**

NEW ! BBC BASIC (86) PLUS

- With these features
- ★ Viewdata/Mode 7 Graphics (EGA Required)
 - ★ Uses ALL the available memory (max 640K)
 - ★ Runtime module
 - ★ Supports VGA, EGA, CGA, MDA
 - ★ Up to 64 colours
 - ★ Analogue colours on a VGA
 - ★ Local error trapping
 - ★ Multi-lined named procedures & functions
 - ★ In-line 8086 assembler
 - ★ VDU commands
 - ★ LIST IF command to list specified lines
 - ★ Fast file access and flexible file handling
 - ★ Full screen, copy-key and line editing
 - ★ Utilities for file transfer from BBC Micro
 - ★ Comms Lead Available

**YOUR OPPORTUNITY TO
USE BBC BASIC ON AN
IBM PC OR COMPATIBLE
WITH ALL THE FEATURES!**

"In Short BBC BASIC (86) is an undoubtedly excellent tool"
(As quoted in a national computer magazine Oct 88)
**BBC BASIC (86) PLUS is the ALL NEW version of
the BBC Programming Language.**

GOOD NEWS

**For
M-TEC BBC BASIC (86)
OWNERS**

Simply send in your original
Master Disk with a cheque for
£28.00 + £5.00 carriage +
VAT, TOTAL £37.95 and we
will send you the NEW
BBC BASIC (86) PLUS.



ORDER TODAY Price £79.00
(0603) 870620 + P&P £5.00
+ VAT £12.60
TOTAL £96.60

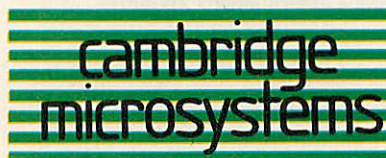
Quote your Access or Visa Number or
send a cheque or postal order to
M-TEC Computer Services UK
The Market Place
Reepham, Norfolk, NR10 4JJ

MATRIX-3

**SCHOLAR OR SCIENTIST FINANCIER OR PHYSICIST
MATRIX-3 ADDS A NEW DIMENSION TO PROBLEM SOLVING
THE 3D SPREADSHEET FOR THE ARCHIMEDES RANGE (1Meg min)**

Features include:

75 Functions 30 Commands
Cell programs
Evaluate/Set cell
Optimised calculation
NEW - CSV files supported
Allows graphics via PRESENTER
(Available from Lingenuity)



**19 Panton Street, Cambridge
CB2 1HL Telephone 0223 66553**

£95.00 + VAT

To order: Send cheque for
£109.25 payable to
Cambridge Microsystems
Official orders accepted
Site licences available
Phone or write for brochure

CHILDREN'S STORIES

Carefully controlled vocabulary and simple instructions now make adventure programs available to infants. Three examples are assessed in the context of the classroom

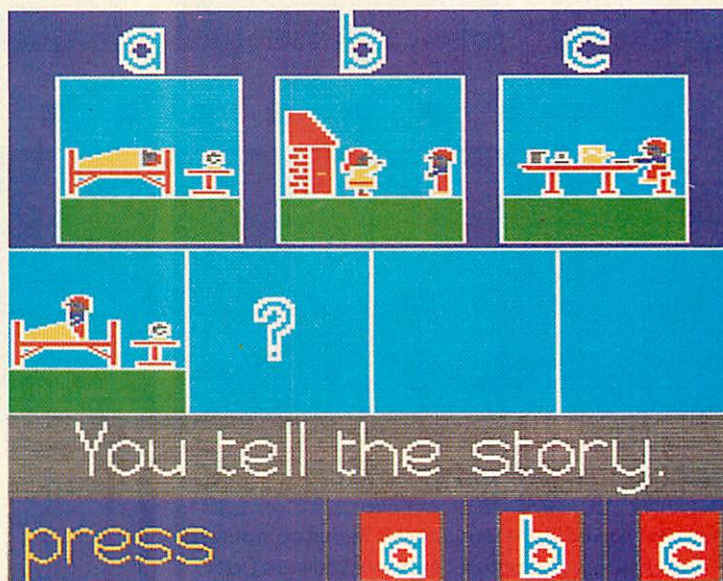
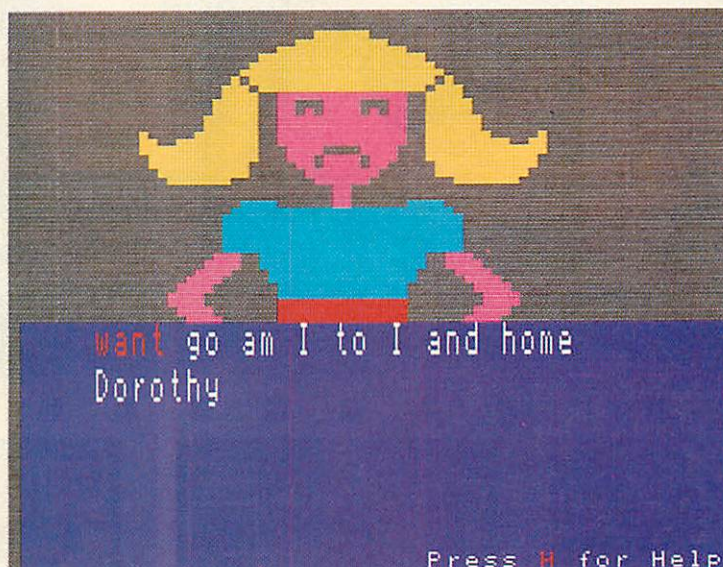
Chris Drage and Nick Evans

A good deal of language development in infant classrooms is fostered through fiction and fantasy, where unfamiliar emotions and situations can be safely encountered. Adventure programs provide another medium through which children can enter imaginary worlds. Typical of the quality language-based software available are *Pip goes to the Moon*, *Yellow Brick Road*, *Albert's House*, *Fairy Lands* and *Teacher's Cupboard*.

Using adventure programs with infants may appear limited by vocabulary and the level of keyboard skills, but each of the programs discussed here uses carefully-controlled vocabulary and well defined procedures to overcome the reading problem. The exploration of a two-storey home in Albert's house is also described in simple words leading to a visualisation and creation of three-dimensional plans.

Adventure programs usually cannot be used by four to six-year-olds, but *Pip goes to the Moon* is an exception. It was developed by a team of teachers, with support materials such as vocabulary and picture sheets. Unlike most educational adventures, *Pip* is designed for individuals rather than groups — probably a sound strategy considering the egocentric nature of the age group. However, it would be nice to have the opportunity for teacher-led group work. After a child has worked through the adventure he or she can produce their own adventure book on a printer (the print styles are delightful).

Obviously children will require a number of skills and concepts before embarking on *Pip*; numbers 1-9, being able to add up to five, spell their own



Top: *Yellow Brick Road* sets a wide range of problems for nine-year-olds
Bottom: *Teacher's Cupboard* has delightful animated graphics

T H E · L A S T NINJA



LEVEL 1



LEVEL 2



LEVEL 5



LEVEL 6

THE LAST NINJA...THE STATE OF THE MARTIAL ARTS

The secrets of the Ninjitsu way had been jealously guarded for centuries, only once every decade were the scrolls seen at the ritual of the White Ninja.

None coveted these secrets more than the evil Shogun. Seizing the opportunity of the ritual he sprang a fiendish trap that destroyed the brotherhood, except for one . . . You. The Last Ninja.

Your sworn oath is to recover the scrolls, you travel to the mystical lands of the Shogun. Already his guards are mastering the ways of the Ninjitsu.

To reach the Shogun's Palace you must use all your weapon craft and fighting skills as you travel through dangerous wastelands, magnificent gardens then descend into the direst dungeons before the final confrontation . . . You cannot fail. You are the Last Ninja.

BBC Micro Cassette£9.95 Acorn Electron Cassette.....£9.95
BBC Micro 5¼" Disc£11.95 BBC Master Compact 3½" Disc.....£14.95

(Compatible with the BBC B, B+ and Master Series computers)

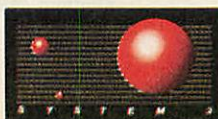
Please make cheques payable to "Superior Software Ltd".
(The screen pictures show the BBC Micro version of the game.)

THE LAST NINJA, one of the greatest No. 1 hits on the Commodore computer, is now available for the BBC Micro/Master and Acorn Electron computers, under licence from System 3/Activision (UK) Ltd.

**SUPERIOR
SOFTWARE**
Limited

(Acornsoft is a registered trademark of Acorn Computers Ltd. Superior Software Ltd is a registered user.)
Dept LN4, Regent House, Skinner Lane, Leeds LS7 1AX. Telephone:(0532) 459453

ACORNSOFT



24 HOUR TELEPHONE
ANSWERING SERVICE FOR ORDERS

OUR GUARANTEE

- All mail orders are despatched within 24 hours by first-class post.
- Postage and packing is free.
- Faulty cassettes and discs will be replaced immediately.
(This does not affect your statutory rights).

name, recognise the initial letter of three words and match shapes, colours and words. Throughout *Pip* options are highlighted in sequence and are selected with the space bar: a sensible feature. Children can make a number of choices, and there are at least two sections of the adventure which the computer randomises, so no two sessions will be the same. *Pip Goes to the Moon* is a very pleasing introduction to adventures, and a sequel, *Pip's Island Adventure*, should be out by the time you read this.

Aimed at the other end of the infant school is *Yellow Brick Road* for seven to nine-year-olds, also developed by the NORICC team. This could be used with top infants who are familiar with the plot of *The Wizard of Oz*. The activities generated are designed to develop language skills through problem solving, decision making and prediction. The charming graphics are like those in *Granny's Garden* and children love them.

The program has three parts, each of which may be selected from a menu. Children must help Dorothy locate her travelling partners, then travel together along the Yellow Brick Road and finally help the characters to reach their goals. In each part a variety of problems must be solved: code breaking, colour mixing, word building, number patterns, sentence ordering and synonyms to mention a few! Solutions are in the handbook.

Albert's House fits comfortably into the infant school's language/arts curriculum. It comprises a suite of four programs designed to enrich and complement the topic 'my house': a popular theme with this age group. Albert Mouse lives in a detached suburban house with a cat. The programs stimulate considerable discussion at the computer and a lot of work away from it. 'Explore the House' contains no text and offers children an uncomplicated tour of Albert's environment. Nine locations are linked and presented on screen. Children 'move' from room to room becoming familiar with the geography of the house.

'Search the House' extends the first program by introducing text and by concentrating on relevant detail within each location. By interrogating the computer in much the same way as a simple database, children gain information about every nook and cranny, including Albert's mouse-hole!

In 'Hide and Squeak' Albert invites the children to hide him somewhere in



Fairy Lands adventure-writing for top infants

the house, and then search for him with the help of a 'mouse-meter'. A number of control options are offered to help the teacher tailor the program to individual needs of the children.

'Save the Mouse' is a problem-solving task requiring logic and strategy. A pack of sheets of words and pictures which can be photocopied provides a range of preliminary and follow-up activities.

Albert's House is popular with six to seven-year-olds, and teachers will find it can enhance a number of related topics.

Teacher's Cupboard from Sherston offers adventure and problem-solving activities for five to seven-year-olds. It comprises two delightful adventures for lower and middle infants respectively. The package contains a disc, workcards, story book, poster, function key strip, Concept Keyboard overlays and teacher's handbook.

The sound level and choice of input device may be selected. Interestingly, Sherston will provide a Microvitec Touchtec 501 version on request. This means a child simply points to the screen to select an object. The first adventure is 'The Apple'. Here, lower infants are invited into the world of the teacher's book room and then are transported to land of magic where two visual puzzles must be solved: sequencing and 'I Spy'. Similarly, 'The Crown' (for middle infants), uses the same scenario and two puzzles — cloze procedure and 'Spot the Difference' — to locate a crown and return it to the teacher's bookroom.

The animated graphics are delightful, as is usual from Sherston, and the user-interface is well thought out. The screen text is a little 'blocky' but acceptable for young children. *Teacher's Cupboard* is a valuable resource which could form a central theme for a topic or be used to complement one.

Not strictly an adventure as such, but rather a simple adventure land generator, *Fairy Lands* from Resource is for top

infants who are able to produce simple branching stories with a definite 'adventure flavour'; however, puzzles and problems cannot be included. The program further allows children to explore made-up 'adventures' saved on disc. It provides children with a taste of adventure writing which could be developed further, and even young children can combine pictures from a disc library with text and special character blocks to create scenes.

Fairy Lands permits children to map their adventure on a 10 x 20 grid, numbering each location as they go. Pages are created and edited as they are in another Resource pack, *Fairy Tales*, with up to 11 pictures per scene, but 26 special picture characters allow complicated scenes to be created. Large, colourful text completes each scene. Up to 40 scenes can be compiled into an 'adventure' and printed out individually. When exploring an adventure, movement from scene to scene is achieved by entering 'N, S, E or W' whenever a scene is displayed. Although only accessible to children with well developed language and keyboard skills, *Fairy Lands* offers a pleasing introduction to adventure writing.

Fairy Lands excepted, what each program discussed has in common is stimulating and motivating subject matter, colourful graphics, well structured vocabulary and simple input routines. Each provides the infant teacher with highly motivating resource materials from which a number of related themes may develop. Each program has proven particularly successfully with infant children; positively encouraging children to talk and listen to each other in the quest for solutions. Each is certainly guaranteed to stimulate a wealth of discussion and written work.

Pip Goes to the Moon £9 for the BBC B, B+ and Master, £11 for the Compact and *Yellow Brick Road* £12 for the BBC B, B+ and Master, £14 for the Compact from Northern Micromedia, Resources Centre, Coachline Campus, Newcastle-Upon-Tyne, NE7 7XA. *Albert's House*, £16.95 plus VAT and *Fairy Tales*, £14.95 plus VAT, both for BBC B, B+, Master 128 and Compact from Resource, Exeter Road, off Coventry Grove, Doncaster DN2 4PY. *Teacher's Cupboard*, £20.13 for the BBC B, B+, Master 128 and Compact from Sherston Software, Swan Barton, Sherston, Malmesbury, Wilts SN16 0LH.

Dabhand User News

ABC: The Archimedes Basic Compiler

"ABC is a vital part of any programmer's toolbox, it puts compilers on other systems to shame. Unquestionably one of the most impressive pieces of software I have yet seen running on the Archimedes." A&B Dec 1988

As A&B Computing found, the Archimedes Basic Compiler makes writing machine code programs and relocatable modules as easy as ABC! Programs can be written using the full range of BASIC V's error messages and report's, and once fully working, run through ABC which transforms them into machine code, ready for immediate action. ABC accepts assembly listings within programs.

ABC supports a comprehensive range of Compiler Directives to enable you to control how the compiler works to suit your own requirements. Programs may be compiled either in RAM or to and from disc. The code produced is totally stand alone (the FPE may be needed). ABC is extremely easy to use and speed increases of up to and over 4000% are possible.

Demo Disc: We have produced a demo disc of ABC which still supports over 100 commands. It costs just £2 and this is refundable on any subsequent purchase. A full specification sheet is also available on request.

ABC was written by Paul Fellows head of the team that wrote the Archimedes Operating System. Is there a better qualification?

"I was impressed...The code is efficient...and the speed is justifiably fast...the compiler is very easy to use..."
A&B.

£99.95

Arcendium: Board Game Fun for All!

Backgammon, Draughts, Reversi and Quadline – four games for the price of one! Sure to get the whole family using the Archimedes and offering numerous levels of play, sound, speech and superb colour graphics. **£14.95**

Alerion: Arcade Action!

The highly acclaimed all-action shoot-em-up for the Archimedes. 256 colour mode graphics, with digitised speech. Impossible to finish! *"...the gameplay makes this game a winner...a first rate game..."* A&B.

£14.95

Archimedes PC Emulator Shareware

Five discs full of PC software tested with the emulator to ensure compatibility. The collection includes software you would normally expect to pay a fortune for and includes a wordprocessor, spreadsheet, games, flowchart designer, printer utilities, and a feast more. Nearly 4Mbs of software complete with a Dabs Press User Guide. See Master Shareware Collection for more details. **£34.95**

Master 512 Shareware Collection

Five 800k discs bursting at the seams with software fully tested on the Master 512. Includes Mindreader, a powerful wordprocessor with mailmerge, spelling checker, and an amazing 'word anticipate' feature. As Easy As is a full-function Lotus-compatible spreadsheet, with macros and graphics. Games include Bridge, colour chess, plane-flying etc. Utilities include a writing style analyser, font designer, letter-quality text printer ... and so the list goes on. Nearly 4Mbs of PC action complete with User Guide. **£29.95**

Mini Office II Book

Mini Office II: A Dabhand Guide is the only definitive guide to Mini Office II. It covers all modules and provides practical advice on how to put them to best effect. 256 pages by Bruce Smith and Robin Burton for just **£9.95**. Mini Office II programs disc contains useful utilities for Mini Office II users for just **£7.95**.

MiniDriver is the ultimate printer driver ROM for use within Mini Office II. provides over 40 new commands and a Viewdata terminal as well. Just **£24.95**.

C: A Dabhand Guide

PCW said: *"I only wish this book had been available when I was learning C."* If you want to learn C on your Beeb or Archimedes then this 512 page volume is the way to do it. And at **£14.95** it represents quite incredible value.

Archimedes Assembly Language

386 pages devoted to programming the Archimedes in machine code. At **£14.95** it is the *only* book which deals specifically with assembler on the Archimedes. Book and programs disc **£21.95**

FREE on Request Bumper Catalogue!

Coming Soon

Archimedes Operating System: Our book on the OS. Available end of Jan.89.

Master 512 User Guide and Master 512 Technical Guide: Suffered a few delays but now just around the corner. The wait will be worth it!

DABS PRESS

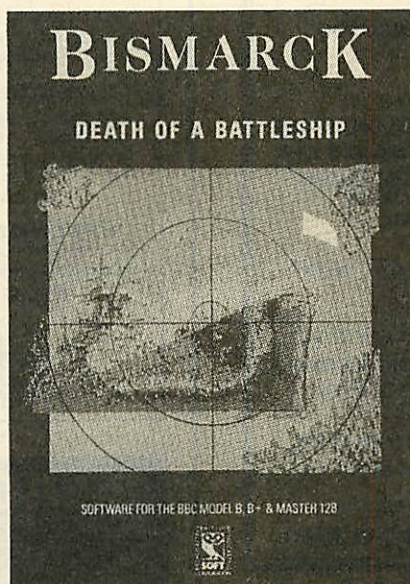
5 Victoria Lane (AUJ), Whitefield, Manchester M25 6AL

Tel: 061-766 8423 BT Gold: 72:MAG11596 Prestel: 942876210

Prices include VAT and P&P (UK/BFPO/CI). ACCESS/VISA accepted by post/phone/Mailbox/ in person. Cheques and POs to address above. Dabs Press products available from all good dealers. Add £2.50 (£12 air) if outside UK. Official orders welcome.

OFFERS

BBC GAMES



Play while you learn

The three BBC games on offer this month are all a little bit more than games, they are great fun to play while being excellent teaching aids. So pick up one or all of these games and learn to play battleships, bridge or chess this New Year.

Re-enact the most memorable naval battle of the second world war with *Bismarck*, the enthralling strategy game based on the Royal Navy's frantic search for the predatory German battleship Bismarck in the spring of 1941. Pit your wits against the computer or take either the British or German role against the other player. You could try an exciting alternative battle plan and remake history! Everytime you play, the User Guide also gives you all the historical background to the battle. *Bismarck* is available for the BBC B, B+, Master128 at only £14.95.

Black Queen is an absorbing Contract Bridge program, a must for

complete beginners or experienced players alike. In addition to features such as bidding, playing, and scoring, you can construct deals from standard or 'Classic' ones in books or newspapers, and experiment with 'tailor-made' deals. '*Black Queen*' offers you an almost inexhaustible source of bridge enjoyment and comes on disc for the BBC B, B+ and Master128 at £14.95.

White Knight Mk 12 is a game with the features offered by a sophisticated and powerful chess program. These include a 'thinking moves ahead' display and a facility to step forwards or backwards through 120 moves. You can also change sides with the program or try out the frantic pace of playing 'blindfold' chess! *White Knight* also features pawn promotion and elapsed time clock for white and black. The game is an advanced update of *White Knight Mk 11* and is on disc for the BBC B, B+, Master 128 and Master Compact at £14.95.

Please send me _____ copies of *Bismarck* at £14.95

_____ copies of *Black Queen* at £14.95

_____ copies of *White Knight* at £14.95

Name _____

Address _____

Postcode _____

Signed _____ Date _____

I enclose my cheque for £_____ made payable to BBC Enterprises Ltd

Please charge by Access/Barclaycard _____

Acc No

Expiry Date

Send this coupon with your remittance to BBC Offer, Acorn User Merchandising, Redwood Publishing Ltd, 20-26 Brunswick Place, London N1 6DJ.

EMR GREAT XMAS OFFERS!

Last month we gave details of some superb offers for BBC users.
NOW we add some superb programmes for the ARCHIMEDES too!

BBC

MIDITRACK PERFORMER + MIDI INTERFACE ONLY £99
- SAVE £30!

SCOREWRITER COMPLETE SYSTEM ONLY £199
- SAVE £60!

MIDITRACK MUSIC SYSTEM WITH INTERFACE ONLY £199
- SAVE OVER £50!

MOST OTHER BBC SOFTWARE WITH BIG SAVINGS TOO

ARCHIMEDES

SUPERB SOUNDSYNTH SAMPLING VOICE CREATOR ONLY £48
CREATIONS DISK — 35 EXCITING SOUND SAMPLES ONLY £18

STUDIO 24 PLUS BRILLIANT NEW SYSTEM FOR RECORDING
MIDI AND PLAYING INTERNAL/MIDI INSTRUMENTS
— A NEW PRICE BREAKER AT ONLY £99!

SEND FOR FULL INFO PACKS ON BBC AND ARC NOW!

These offers are valid until 31st Dec 1988 and are direct
mail order prices from EMR. When ordering state micro
model and for BBC 40 or 80 trk disk. Studio 24 Plus
requires a Midi interface.

All offer prices include VAT. Please add £2.50 P&P in UK.
Access/Visa orders taken via phone (24-hr).

EMR LTD, 14 Mount Close, Wickford, Essex SS11 8HG. Tel: 0702 335747.

WITH
PAYROLL

A LOW COST DISC BASED PROFESSIONAL ACCOUNTING PROGRAM

For the BBC Computer

"Micro-Trader"

INTEGRATED SALES PURCHASE AND NOMINAL LEDGERS

Designed for business use by a business man, "Micro-Trader" offers full Sales and Purchase Ledger facilities including SALES INVOICE and STATEMENT PRINTING with a capacity of up to 1,000 accounts and 5,000 transactions per month.

Nominal Ledger features quick and easy entry of everyday transactions. Up to 6 Bank Accounts, full V.A.T. facilities, Journal Posting. Full Reporting for individual accounts, Audit Trail, Trial Balance, Profit & Loss and Balance Sheet.

"MICRO-STOCK"

Stock Control program, fully integrated with "Micro-Trader". 4,000 Stock Items with user defined Codes. Invoice and Credit Notes and Cash Sales routine. Full Stock Held Reports.

£75.00 + V.A.T.

"EXTENDED PAYROLL"

Micro-Aid Full Feature Extended Payroll. For use stand alone or integrated with "Micro-Trader".

£49.95 + V.A.T.

"MICRO-MAILER"

A Mailmerge program, fully integrated with "Micro-Trader". With a user Database.

£30.00 + V.A.T.

ONLY
£200
+ V.A.T.

Compact
BRITISH BROADCASTING CORPORATION
MASTER SERIES MICROCOMPUTER

Archimedes

PHONE TODAY FOR A FREE FACT SHEET

MEADOW COMPUTERS

11, LONDON STREET, WHITCHURCH, HAMPSHIRE, RG28 7LH

Telephone: Whitchurch (0256) 892008

PUBLIC APOLOGY

We at M.D. Office Supplies would like to take this opportunity to apologise to all our competitors. We shall with IMMEDIATE effect supply COMPUTER DISCS, STORAGE BOXES, ETC, AT INCREDIBLE PRICES.

OUR SPECIAL OFFER PRICES ARE UNBEATABLE

5.25" DISCS & BOXES

| | |
|--|--------|
| 25 Double Sided 96 TPI with 50 Capacity Disc Box | £12.95 |
| 50 Double Sided 96 TPI with 50 Capacity Disc Box | £17.95 |
| 75 Double Sided 96 TPI with 100 Capacity Disc Box | £22.95 |
| 100 Double Sided 96 TPI with 100 Capacity Disc Box | £28.95 |

All boxes come complete with dividers, two keys and are antistatic

3.5" DISCS & BOXES

| | |
|---|--------|
| 20 Double Sided 135 TPI Discs with 40 Capacity Disc Box | £21.95 |
| 30 Double Sided 135 TPI Discs with 40 Capacity Disc Box | £29.95 |
| 40 Double Sided 135 TPI Discs with 80 Capacity Disc Box | £36.95 |
| 50 Double Sided 135 TPI Discs with 80 Capacity Disc Box | £43.95 |
| 60 Double Sided 135 TPI Discs with 80 Capacity Disc Box | £49.95 |
| 75 Double Sided 135 TPI Discs with 80 Capacity Disc Box | £59.95 |

All boxes come complete with dividers, two keys and are antistatic

PRICE AND QUALITY GUARANTEE

All our discs are top quality and are certified 100% error free.
Should you ever see a comparable product advertised in this magazine at a lower price we will not match it we will beat it **Guaranteed**

BRANDED DISCS

| | | 10 | 30 | 50 | 100 |
|----------|-----------------|-------|-------|-------|--------|
| 3M | DSDD48TP1 5.25" | 9.95 | 28.90 | 43.95 | 79.95 |
| 3M | DSDD96TP1 5.25" | 12.95 | 37.90 | 52.95 | 119.95 |
| VERBATIM | DSDD48TP15.25" | 9.45 | 28.50 | 42.95 | 78.45 |
| VERBATIM | DSDD96TP15.25" | 11.95 | 36.50 | 49.95 | 114.95 |
| 3M | DSDD135TP13.5" | 18.50 | 45.00 | POA | POA |
| VERTABIM | DSDD135TP13.5" | 19.50 | 46.50 | POA | POA |
| SONY | DSDD135TP13.5" | 18.95 | 47.50 | POA | POA |

For lowest rates in the UK please ring for prices (min 250 discs)

ACCESSORIES

| | |
|---|---------------|
| 3.5" HEAD CLEANER | 3.95 |
| 5.25" HEAD CLEANER | 3.95 |
| DELUXE MOUSE MATS | 3.95 |
| DISC NOTCHER (DOUBLER) | 3.95 |
| PROFESSIONAL PRINTER STAND (Spacesaver) | |
| 80 COL | 22.95/132 COL |
| | 23.95 |

STORAGE BOXES

| | |
|----------------------------|-------|
| 3.50" Lockable - Holds 40 | £5.95 |
| 3.50" Lockable - Holds 80 | £6.95 |
| 3.50" Lockable - Holds 120 | £8.95 |
| 5.25" Lockable - Holds 50 | £5.95 |
| 5.25" Lockable - Holds 100 | £6.95 |
| 5.25" Lockable - Holds 140 | £8.95 |



M. D. OFFICE SUPPLIES

18 Cresent Way, Farnborough, Kent BR6 9LS. Tel: 0689 61400. Fax: 0689 50628

All goods are supplied subject to availability. All prices inclusive of VAT and Carriage

MON-WED 9AM-8PM

Educational - Government - Corporate Orders Welcome

THURS-SAT 9AM-9PM



COLOURJET 132

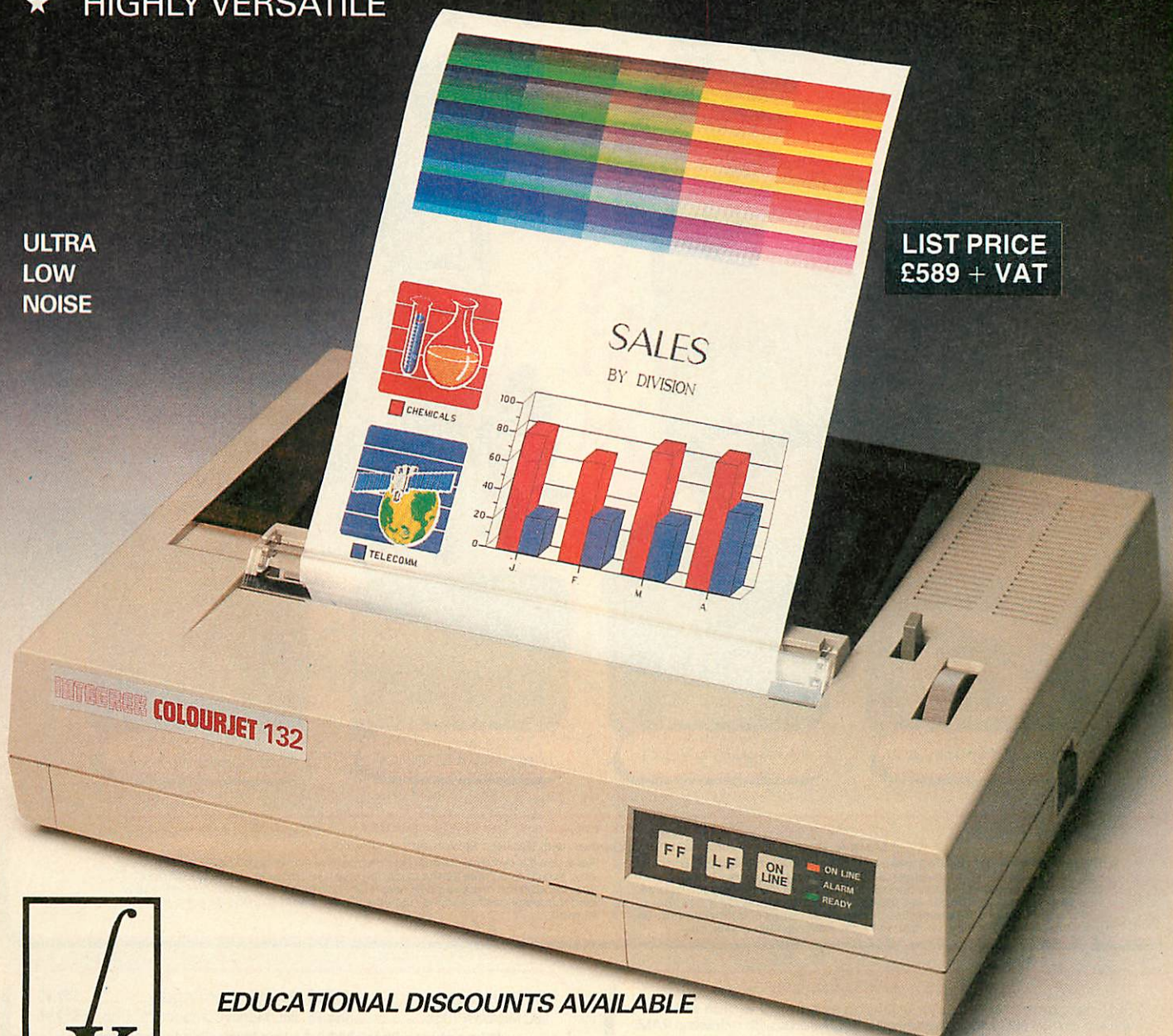
HIGH PERFORMANCE COLOUR INK JET PRINTER

(compatible with IBM pc, BBC micro, Nimbus etc.)

- ★ PRINTS ALL 64 SCREEN COLOURS FROM CGA AND EGA USING OPTIONAL INTEGRIX SOFTWARE
- ★ EMULATES OTHER PRINTERS (A1210, PJ1080A and QUADJET)
- ★ OVERHEAD TRANSPARENCY PRINTING
- ★ 80 + 132 COLUMN OPERATION, A4 WIDTH
- ★ UP TO 1280 DOTS/LINE ADDRESSABLE
- ★ FULL VIDEOTEX CAPABILITY
- ★ OPTIONAL BUFFERED RS232 (INTERNAL)
- ★ HIGHLY VERSATILE

ULTRA
LOW
NOISE

LIST PRICE
£589 + VAT



EDUCATIONAL DISCOUNTS AVAILABLE

INTEGRIX LTD CHURCH GRESLEY, BURTON ON TRENT
STAFFS DE11 9PT
Tel (0283) 215432
Telex 341727 INTEGXX

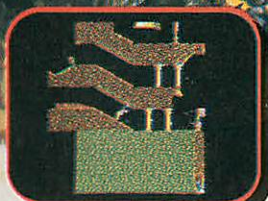
EXILE is an even more enjoyable game to play than **ELITE** or **ZARCH**™
... David Braben (co-author of **Elite**, author of **Zarch**).

PRIZE COMPETITION
Can You Become Exile World Champion?

EXILE



Leaving the Space Craft



Attacked by a Robot



Shooting the Mischievous Monkeys



Searching for Abandoned Weapons

Have you the Skill and Cunning to Conquer the World of EXILE?

A Massive Arcade Adventure featuring Characters with Realistic Movements and Actions.

The planet Phoebeus has been taken over by an exiled, evil Genetic Engineer, named Triax. In a complex warren of caves, he has built an evil world inhabited by eccentric robots and strange mutated creatures, such as blue monkeys, giant wasps and sharp-toothed eyeless maggots. On the planet surface and around the caves are scattered the debris of a previous mission, and maybe some of the members of that ill-fated venture still remain.

Have you the skill and cunning to conquer the evil world of the exile? Are you of elite status? If you take up the challenge, you will have to carefully pick your way through the massive cave system, solving complex puzzles along the way and ruthlessly destroying the alien creatures, until finally you face the evil one himself.

Each copy of EXILE includes:

- The Exile game programs, including an enhanced version which will run on the BBC Master series and BBC Micros with sideways RAM.
- A Novella, which sets the scene for the Exile game.
- An Instruction Manual.

The game was designed and written by Peter Irvin and Jeremy Smith.

BBC Micro Cassette **£12.95** Acorn Electron Cassette **£12.95**
BBC Micro 5 1/4" Disc **£14.95** BBC Master Compact 3 1/2" Disc **£19.95**

(Compatible with the BBC B, B+ and Master Series computers)

Please make cheques payable to "Superior Software Ltd".

(The screen pictures show the enhanced version of the games.)

SUPERIOR
SOFTWARE
Limited

(Acornsoft is a registered trademark of Acorn Computers Ltd. Superior Software Ltd is a registered user.)
Dept. EX2, Regent House, Skinner Lane, Leeds LS7 1AX. Telephone: (0532) 459453

ACORN**SOFT**

Available from

WHSMITH

and all major dealers



24 HOUR TELEPHONE
ANSWERING SERVICE FOR ORDERS

OUR GUARANTEE

- All mail orders are despatched within 24 hours by first-class post.
 - Postage and packing is free.
 - Faulty cassettes and discs will be replaced immediately.
- (This does not affect your statutory rights)

YELLOW PAGES

COMPATIBILITY

| Program | Page | BBC B | B+/128 | Master 128 | Master Compact | Electron | Arc | 6502SP/Turbo | ADFS | Econet | Shadow RAM | Monthly T/D |
|-----------------|------|-------|--------|------------|----------------|----------|-----|--------------|------|--------|------------|-------------|
| Hints & Tips | | | | | | | | | | | | |
| Listing 1 | 97 | ■ | ■ | ■ | ■ | | | | ■ | ■ | ■ | ■ |
| Listing 2 | 98 | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | ■ |
| Listings 3-4(1) | 98 | ■ | ■ | ■ | ■ | | | ■ | ■ | ■ | ■ | ■ |
| Listings 5(2) | 98 | ■ | ■ | ■ | ■ | | | ■ | ■ | ■ | ■ | ■ |
| Arc Agora | | | | | | | | | | | | |
| Listings 1-4 | 99 | | | | | | ■ | | ■ | ■ | ■ | ■ |
| Listing 5 | 101 | | | | | | ■ | | ■ | | ■ | ■ |
| Listing 6 | 102 | | | | | | ■ | | ■ | ■ | ■ | ■ |
| Joe's User Card | | ■(3) | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | ■ |
| Listings 1-2 | 103 | | | | | | ■ | | ■ | ■ | ■ | ■ |
| GKS | | | | | | | | | | | | |
| Listings 1-2(4) | — | | | | | | ■ | | ■ | ■ | ■ | ■ |
| Random Numbers | | | | | | | | | | | | |
| Listings 1-3 | 110 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |

Note 1. Requires Interword. 2. Requires Wordwise Plus. 3. Requires Shadow RAM. 4. On monthly disc only; paper listing available with SAE.

HINTS & TIPS

See Hints & Tips, page 41

Listing 1 Auto-screen off

```

10 REM Fade to Black
20 REM by David Ather
ton
30 REM for B/B+/M/C
40 REM (c) Acorn User
Jan 89
50 :
60 seconds=5
70 delay=(50*seconds)
+256
80 oldkeyv=!&228
90 FOR pass=0 TO 3 ST
EP 3
100 PZ=&900
110 [OPT pass
120 .install
130 SEI
140 LDA #event MOD 256
150 STA &220
160 LDA #event DIV 256
170 STA &221
180 LDA #keytest MOD 2
56
190 STA &228
200 LDA #keytest DIV 2
56
210 STA &229
220 CLI
230 LDA #14
240 LDX #4
250 JMP &FFF4
260 :
270 .event
280 PHP
290 PHA
300 TXA
310 PHA
320 TYA
330 PHA
340 JSR main
350 PLA
360 TAY
370 PLA
380 TAX
390 PLA
400 PLP
410 .ret
420 RTS
430 :
440 .main
450 LDA &248
460 AND #2
470 STA teletext
480 LDA off
490 BNE ret
500 DEC count
510 BNE ret
520 DEC count+1
530 .nohi
540 BNE ret
550 LDY teletext
560 LDA data+1,Y
570 JSR program
580 DEC off
590 RTS
600 :
610 .keytest
620 PHP
630 PHA
640 TXA
650 PHA
660 TYA
670 PHA
680 JSR main2
690 PLA
700 TAY
710 PLA
720 TAX
730 PLA
740 PLP
750 JMP oldkeyv
760 :
770 .main2
780 LDA #delay MOD 256
790 STA count
800 LDA #delay DIV 256
810 STA count+1
820 LDA off
830 BEQ ret2
840 LDY teletext
850 LDA data,Y
860 JSR program
870 LDA #0
880 STA off
890 .ret2
900 RTS
910 :
920 .program
930 LDX #8
940 STX &FE00
950 STA &FE01
960 RTS
970 .data
980 OPT FNequb(&01)
990 OPT FNequb(&F0)
1000 OPT FNequb(&93)
1010 OPT FNequb(&FF)
1020 .off
1030 OPT FNequb(0)
1040 .teletext
1050 OPT FNequb(0)
1060 .count
1070 OPT FNequb(delay)
1080 .end

```

Continued ►

YELLOW PAGES

HINTS & TIPS

◀ Listing 1. Auto-screen off continued

```

1090 J
1100 NEXT pass
1110 A$="SAVE BLACK "+S
TR$~install+" "+STR$(en
d~install)
1120 PRINT A$
1130 PRINT "Press S to
save, or I to install"
1140 REPEAT G%=GET AND
&DF:UNTIL G%=ASC"S" OR G
%=ASC"I"
1150 IF G%=ASC "I" THEN
1190
1160 PRINT A$

1170 PROCoscli(A$)
1180 PRINT "Type *BLACK
to install":END
1190 PRINT "Fader insta
lled. Active when unatte
nded for ";seconds;" sec
onds"
1200 END
1210 :
1220 DEF FNequb(b%)
1230 ?P%=b%
1240 P%=P%+1
1250 =pass
1260 :

1270 DEF FNequw(b%)
1280 ?P%=b% MOD 256
1290 P%?1=b% DIV 256
1300 P%=P%+2
1310 =pass
1320 :
1330 DEF PROCoscli(stri
ng%)
1340 DIM X% &FF
1350 Y%=X% DIV 256
1360 $X%=string$
1370 CALL &FFF7
1380 ENDPROC

```

Listing 2. Label lister

```

10*K.OM%=PA.:L%=0:REP
.M%=M%+L%:N%=M%?1*256+M%
?2:L%=M%?3:J%=3:REP.J%=J
%+1:U.M%?J%<>32:IFM%?J%<
>46U.M%+2=TOP EL.P.R.I."
"+STR$N%+" ".",7);:REP
.J%=J%+1:V.M%?J%:U.M%?J%
=32OR M%?J%=13:P.:U.FA.I
M

```

Listing 3. Wordwrap on

```

10 REM Inter-Word wor
dwrap on
20 REM by James Hunt
30 REM for BBC B/B+/M
/C
40 REM (c) Acorn User
Jan 89
50 :
60 indir=&70
70 FOR pass=0 TO 3 ST
EP 3
80 P%=&900
90 IOPT pass
100 LDA #0
110 STA indir
120 LDA &29
130 STA indir+1
140 LDY #&48
150 LDA (indir),Y

```

```

160 AND #&FE
170 STA (indir),Y
180 RTS
190 :
200 J
210 NEXT
220 A$="SAVE WRAPON 90
0 "+STR$~P%
230 PRINT "Press any k
ey to save"
240 IF GET
250 PRINT A$
260 PROCoscli(A$)
270 END
280 :
290 DEFPROCoscli($&700
)
300 LOCAL X%,Y%
310 Y%=7
320 CALL &FFF7
330 ENDPROC

```

Listing 4. Wordwrap off

```

10 REM Inter-Word Wor
dwrap off
20 REM by James Hunt
30 REM for BBC B/B+/M
/C
40 REM (c) Acorn User
Jan 89
50 :

```

```

60 indir=&70
70 FOR pass=0 TO 3 ST
EP 3
80 P%=&900
90 IOPT pass
100 :
110 LDA #0
120 STA indir
130 LDA &29
140 STA indir+1
150 LDY #&48
160 LDA (indir),Y
170 AND #&FE
180 EOR #1
190 STA (indir),Y
200 RTS
210 :
220 J
230 NEXT
240 A$="SAVE WRAPOFF 9
00 "+STR$~P%
250 PRINT "Press a key
to save"
260 IF GET
270 PRINT A$
280 PROCoscli(A$)
290 END
300 :
310 DEFPROCoscli($&700
)
320 LOCAL X%,Y%
330 Y%=7
340 CALL &FFF7

```

Listing 5. File backup

```

REM Grandfather-Father-Son
REM by Julia M.E.Gwyther
REM for B/B+/M/C with Wordwise Plus
REM (c) Acorn User Jan 89
CLS
PRINT "      Save latest text as SON"
PRINT "      "
PRINT "      "
PRINT "Drive 0 Directory R will be u
sed"
PRINT
PRINT "Do you want to proceed?"
PRINT "Type Y or N"
G$=GCK$
IF G$<>"Y" AND G$<>"y" THEN PROCnosav
e

```

```

REM rename and save
PRINT
PRINT "      Save routine"
PRINT "      "
PRINT "      "
PRINT "Deleting GRANDAD"
*DELETE :O.R.GRANDAD
PRINT "Renaming DAD as GRANDAD"
*RENAME :O.R.DAD R.GRANDAD
PRINT "Renaming SON as DAD"
*RENAME :O.R.SON R.DAD
PRINT "Saving text as SON"
SELECT TEXT
SAVE TEXT ":O.R.SON"
PRINT
PRINT "      Now saved"
PRINT "      "

```

Continued ▶

YELLOW PAGES

A R C A G O R A

◀ Listing 5. Wordwise file backup continued

```
PRINT
VDU7
PROCend
.nosave
PRINT
PRINT "                Not saved"

PRINT
.end
PRINT "Press any key"
G%=GET
DISPLAY
END
```

See Arc Agora page 47

Listing 1. Create sample

```
10 REM Agora - listing 1
20 REM Creates a sound sample
30 REM by Dave Acton
40 REM for Archimedes only
50 REM (c) Acorn User January 1989
60 :
70 MODE 0
80 PRINT "Creating sample sound file."
..
90 DIM d(255),lump% 255
100 FOR s%=0 TO 255
110 d(s%)=&7F*SINRAD(s%*360/256)
120 NEXT

130 CLOSE# 0
140 out%=OPENOUT "Raw"
150 FOR batch%=1 TO 500
160 PRINT TAB(0,1)batch%
170 FOR s%=0 TO 255
180 d(s%)=d(s%)*0.99
190 lump%?s%=&80+d(s%)
200 NEXT
210 SYS "OS_GBPB",2,out%,lump%,256
220 NEXT
230 CLOSE# out%
240 PRINT "Sample file saved as 'Raw'"
250 END
```

Listing 2. Strip sample

```
10 REM Agora - listing 2
20 REM Modifies sample data
30 REM by Dave Acton
40 REM for Archimedes only
50 REM (c) Acorn User January 1989
60 :
70 MODE 0
80 DIM c%(255)
90 FOR x%=0 TO 255
100 SYS "Sound_SoundLog", (x%&80)<<24
TO c%(x%)
110 NEXT
120 INPUT "Which 'raw' file? "f$
130 IF f$="" f$="Raw"
140 in%=OPENIN(f$)
150 e%=EXT# in%
160 CLOSE# in%
170 DIM junk% e%
180 SYS "OS_File",255,f$,junk%

190 PRINT "Strip off data at start? (Y/N) ";
200 REPEAT
210 yn%=INSTR(" YyNn",GET%) DIV 2
220 UNTIL yn%>0
230 IF yn%=1 PRINT "YES":first%=&18 EL
SE PRINT "NO":first%=0
240 PRINT "Modifying data now..."
250 FOR x%=first% TO e%
260 x%?junk%=c%(x%?junk%)
270 NEXT
280 INPUT "Save converted data as: "f$
290 IF f$="" f$="Demo"
300 SYS "OS_File",0,f$,,,junk%+first%,
junk%+e%
310 PRINT "Modified data saved as '"f$
""
320 END
```

Listing 3. Convert sample to module

```
10 REM Agora - listing 3
20 REM Makes a sound module
30 REM by Dave Acton
40 REM for Archimedes only
50 REM (c) Acorn User January 1989
60 :
70 MODE 0
80 INPUT "Enter name of (modified) da
ta file: "f$
90 IF f$="" f$="Demo"
100 SYS "OS_File",5,f$ TO ,,,,size%
110 t%=LEFT$(f$+STRING$(10," "),10)
120 DIM code% &1000+size%
130 value=0:amp=1:phaseacc=2
140 time=4:read=5:ptr=9
150 dmaend=10:dmaend=11:dmaend=12
160 sp=13:link=14:pc=15
170 FOR pass%=4 TO 6 STEP 2
180 P%=0:O%=code%
190 LOPT pass%

200 EQU 0
210 EQU initmod
220 EQU finalmod
230 EQU 0
240 EQU title
250 EQU help
260 EQU 0
270 EQU 0
280 EQU 0
290 EQU 0
300 :
310 .title
320 EQU "AU-" + f$
330 EQU 0
340 ALIGN
350 .help
360 EQU "AU-" + t$ + CHR$9 + "1.00 (" + MID$(
TIME$,5,11) + ")"
370 EQU 0
380 ALIGN
```

Continued ▶

YELLOW PAGES

A R C A G O R A

◀ Listing 3. Convert sample to module continued

```

390 :
400 .initmod
410 STMFD (sp)!,{link}
420 ADR R0,voicebase
430 MOV R1,#0
440 SWI "Sound_InstallVoice"
450 STR R1,slot
460 ADR R0,v%
470 LDR R1,howbig
480 ADD R0,R0,R1
490 STR R0,end
500 LDMFD (sp)!,{pc}
510 :
520 .finalmod
530 STMFD (sp)!,{link}
540 LDR R1,slot
550 SWI "Sound_RemoveVoice"
560 LDMFD (sp)!,{pc}
570 :
580 .voicebase
590 B fill
600 B fill
610 B gateon
620 B gateoff
630 B instance
640 LDMFD (sp)!,{pc}
650 LDMFD (sp)!,{pc}
660 EQUID voicename-voicebase
670 :
680 .voicename
690 EQUUS "AU-" + f$
700 EQUUB 0
710 ALIGN
720 :
730 .instance
740 STMFD (sp)!,{R0-R4}
750 MOV R0,#0
760 MOV R1,#0
770 MOV R2,#0
780 MOV R3,#0
790 MOV R4,#0
800 SWI "Sound_Configure"
810 LDR R0,{R3,#12}
820 STR R0,logampptr
830 LDMFD (sp)!,{R0-R4,pc}
840 :
850 .gateon
860 ADR value,v%
870 STR value,{ptr,#16}
880 LDR value,logampptr
890 STR value,{ptr,#20}
900 .fill
910 LDMIA R9,{R1-R6}
920 AND amp,amp,&7F
930 LDRB amp,{R6,amp,LSL #1}
940 MOV amp,amp,LSR #1
950 RSB amp,amp,#127
960 .fillloop
970 LDR value,end
980 CMP read,value
990 ADRGE read,v%
1000 ADD phaseacc,phaseacc,phaseacc,LSL
#16
1010 LDRB value,{read,phaseacc,LSR #24}
1020 SUBS value,value,amp,LSL #1
1030 MOVMI value,#0
1040 STRB value,{dmastart},dmastep
1050 ADD phaseacc,phaseacc,phaseacc,LSL
#16
1060 LDRB value,{read,phaseacc,LSR #24}
1070 SUBS value,value,amp,LSL #1
1080 MOVMI value,#0
1090 STRB value,{dmastart},dmastep
1100 ADD phaseacc,phaseacc,phaseacc,LSL
#16
1110 LDRB value,{read,phaseacc,LSR #24}
1120 SUBS value,value,amp,LSL #1
1130 MOVMI value,#0
1140 STRB value,{dmastart},dmastep
1150 ADD phaseacc,phaseacc,phaseacc,LSL
#16
1160 LDRB value,{read,phaseacc,LSR #24}
!
1170 SUBS value,value,amp,LSL #1
1180 MOVMI value,#0
1190 STRB value,{dmastart},dmastep
1200 BIC phaseacc,phaseacc,&FF000000
1210 CMP dmastart,dmaend
1220 BLT fillloop
1230 SUBS time,time,#1
1240 STMIB R9,{R2-R5}
1250 MOVPL R0,%00001000
1260 MOVMI R0,%00000010
1270 LDMFD (sp)!,{pc}
1280 :
1290 .gateoff
1300 MOV value,#0
1310 .flush
1320 STRB value,{dmastart},dmastep
1330 STRB value,{dmastart},dmastep
1340 STRB value,{dmastart},dmastep
1350 STRB value,{dmastart},dmastep
1360 CMP dmastart,dmaend
1370 BLT flush
1380 MOV R0,%00000001
1390 LDMFD (sp)!,{pc}
1400 :
1410 .slot
1420 EQUUB 0
1430 .logampptr
1440 EQUUB 0
1450 .howbig
1460 EQUUB size%
1470 .end
1480 EQUUB 0
1490 J
1500 v%=P%
1510 NEXT pass%
1520 PRINT "Importing data..."
1530 SYS "OS_File",255,f%,v%-P%+0%
1540 mod$="AU-" + LEFT$(f$,7)
1550 SYS "OS_File",0,mod$,,,code%,0%+size%
1560 SYS "OS_File",&12,mod$,&FFA
1570 PRINT "Module saved as "mod$
1580 END

```

The length of the GKS library listings (70 kilobytes), plus the demonstration programs means they cannot be printed on the yellow pages. They can of course be obtained from the 3.5-inch monthly disc, or, by sending an SAE (marked 'GKS-Jan89') to AU, 20-26 Brunswick Place, London, N1 6DJ. They are not on the 5.25-inch

monthly disc as the programs work only on an Achimedes.

Due to Micronet's abandonment of paid-for downloadable software, the listings will not be available on Micronet as they have been in the past.

YELLOW PAGES

A R C A G O R A

Listing 4. Play sample

```

10 REM Agora - listing 4
20 REM Sound demonstration
30 REM by Dave Acton
40 REM for Archimedes only
50 REM (c) Acorn User January 1989
60 :
70 MODE 0
80 VOICES 1
90 DIM data% &100,i$(255)
100 REPEAT
110 CLS
120 PRINT "Instruments available:"
130 val%=0
140 n%=0
150 SYS "OS_GBPB",8,,data%,1,n% TO ,,,
unread%,n%
160 WHILE NOT (unread%>0)
170 data%?(?data%+1)=13
180 f$=$(data%+1)
190 IF LEFT$(f$,3)="AU-" i$(val%)=f$:v
al%+=1
200 SYS "OS_GBPB",8,,data%,1,n% TO ,,,
unread%,n%
210 ENDWHILE
220 IF val%=0 PRINT "NONE":END
230 FOR i%=0 TO val%-1
240 PRINT i%+1;"...";i$(i%)
250 NEXT
260 PRINT
270 IF val%=1 THEN
280 f%=i$(0)
290 ELSE
300 REPEAT
310 PRINT "Which instrument? (1-";val%
;") ";
320 INPUT "n%
330 UNTIL n%>=1 AND n%<=val%
340 f%=i$(n%-1)
350 ENDIF
360 OSCLI("RMLOAD "+f%)
370 OSCLI("CHANNELVOICE 1 "+f%)
380 RESTORE
390 REPEAT
400 READ p%,d%
410 IF p%>=0 THEN
420 SOUND 1,-12,p%-48,d%*1.5
430 ENDIF
440 TIME=0
450 REPEAT UNTIL TIME>=d%*7.5
460 UNTIL p%<0
470 OSCLI("RMKILL "+f%)
480 UNTIL FALSE
490 END
500 :
510 DATA 117,2,117,2,117,4
520 DATA 117,2,117,2,117,4
530 DATA 117,2,129,2,101,3,109,1
540 DATA 117,8
550 DATA 121,2,121,2,121,3,121,1
560 DATA 121,2,117,2,117,2,117,2
570 DATA 129,2,129,2,121,2,109,2
580 DATA 101,6,69,2
590 DATA 53,6,69,2,53,6,69,2
600 DATA 53,2,69,2,53,2,69,2
610 DATA 53,8
620 DATA -1,-1

```

Listing 5. Disc copier

```

10 REM Agora - listing 5
20 REM Disc sector copier
30 REM by Jason O'Broin
40 REM for Archimedes only
50 REM (c) Acorn User January 1988
60 :
70 MODE 0
80 memory=HIMEM-TOP
90 memory=memory-&8000
100 maxmem=memory
110 notracks=(memory DIV &1400)
120 DIM badsec 2560
130 DIM buffer maxmem
140 bytesec=1024
150 secno=5
160 noheads=2
170 PROCassemble
180 PROCgetinfo
190 PROCcopy
200 CLS
210 END
220 :
230 DEF PROCgetinfo
240 CLS
250 PRINT TAB(23,1)"Disc Sector Copier
- by Jason O'Broin"
260 INPUT TAB(0,4)"Copy Large (640K) o
r Double sized discs (800K) (L/D): "size
$
270 PROCblank(4)
280 IF INSTR("LlDd",size$)=0 THEN size
$="D"
290 PRINT TAB(50,7);"Copying ";
300 IF INSTR("Ll",size$) THEN
310 PRINT "640K";
320 PROCchange640
330 ELSE PRINT "800K";
340 PROCchange800
350 ENDIF
360 PRINT " disc"
370 INPUT TAB(0,4)"Source drive: "sour
ce%
380 INPUT TAB(0,4)"Destination drive:
"dest%
390 PRINT TAB(0,4)"Insert SOURCE disc
in drive ";source%;" and press a key"
400 *FX 15
410 REPEAT UNTIL GET
420 PROCblank(4)
430 ENDPROC
440 :
450 DEF PROCcopy
460 read=1
470 write=2
480 nosectorscopied=0
490 FOR swaps=0 TO (159 DIV notracks)
500 secstart=swaps*(notracks*secno)
510 nsec=(160*secno)-nosectorscopied
520 IF nsec>notracks*secno THEN nsec
=notracks*secno
530 PROCdisc(read,secstart,nsec)
540 IF source%=dest% THEN
550 PRINT TAB(0,4)"Insert DESTINATION
disc in drive ";dest%;" and press a key"
:VDU7
560 *FX 15
570 REPEAT UNTIL GET
580 PROCblank(4)
590 ENDIF
600 PROCdisc(write,secstart,nsec)
610 nosectorscopied=nosectorscopied+no
sec
620 IF source%=dest% AND nosectorscopi
ed<((160*secno)-1) THEN

```

Continued ►

YELLOW PAGES

A R C A G O R A

◀ Listing 5. Disc copier continued

```

630 PRINT TAB(0,4);"Enter Source disc
in drive ";source%;" and press any key
":VDU7
640 *FX 15
650 REPEAT UNTIL GET
660 PROCblank(4)
670 ENDIF
680 NEXT
690 ENDPROC
700 :
710 DEF PROCassemble
720 DIM code 50
730 FOR pass%=0 TO 2 STEP 2
740 PX=code
750 LOPT pass%
760 .mempt:EQU0 buffer
770 .discaddress:EQU0 0
780 .copylength:EQU0 0
790 .optype:EQU0 0
800 .begin
810 LDR R1,optype
820 LDR R2,discaddress
830 LDR R3,mempt
840 LDR R4,copylength
850 SWI "XADFS_DiscOp"
860 MOV PC,R14
870 J:NEXT
880 ENDPROC
890 :
900 DEF PROCdisc(operation,start,length)
h)
910 PROCblank(20)
920 !mempt=buffer-bytesec
930 !optype=operation
940 FOR getsectors=0 TO length-1
950 track=(start+getsectors)DIVsecno
960 IF noheads=2 THEN
970 IF track>=80 THEN
980 head=1
990 track=track-80
1000 ELSE head=0
1010 ENDIF
1020 ELSE
1030 head=0
1040 ENDIF
1050 IF operation=read THEN
1060 !discaddress=source%<<29
1070 ELSE
1080 !discaddress=dest%<<29
1090 ENDIF
1100 !discaddress=!discaddress+(((track
*noheads)+head)*secno+(getsectors MOD se
cno))*bytesec
1110 !mempt=!mempt+bytesec
1120 !copylength=bytesec
1130 IF operation=read THEN
1140 PROCinfo(15,15,"Reading")
1150 PROCreadsector
1160 ENDIF
1170 IF operation=write THEN
1180 IF badsec?(start+getsectors)=0 THE
N
1190 PROCinfo(15,15,"Writing")
1200 CALL begin
1210 ENDIF
1220 ENDIF
1230 NEXT
1240 ENDPROC
1250 :
1260 DEF PROCreaderror
1270 PROCinfo(12,20,"Disc Read Error")
1280 badsec?(start+getsectors)=1
1290 ENDPROC
1300 :
1310 DEF PROCreadsector
1320 LOCAL ERROR
1330 badsec?(start+getsectors)=0
1340 ON ERROR LOCAL PROCreaderror:RESTO
RE ERROR:ENDPROC
1350 CALL begin
1360 RESTORE ERROR
1370 ENDPROC
1380 :
1390 DEF PROCblank(line)
1400 PRINT TAB(0,line);STRING$(79," ");
1410 ENDPROC
1420 :
1430 DEF PROCchange640
1440 notracks=(maxmem DIV &1000)
1450 secno=16
1460 bytesec=256
1470 noheads=1
1480 ENDPROC
1490 :
1500 DEF PROCchange800
1510 notracks=(maxmem DIV &1400)
1520 secno=5
1530 bytesec=1024
1540 noheads=2
1550 ENDPROC
1560 :
1570 DEF PROCinfo(x,y,mess%)
1580 PRINT TAB(x,y);mess%;" - Head : "
;head;" Track : ";RIGHT$("000"+STR$(trac
k),3);" Sector : ";RIGHT$("00"+STR$(gets
ectors MOD secno),2)
1590 ENDPROC

```

Listing 6. Font file converter

```

10 REM Agora - listing 6
20 REM Master-to-Arc font converter
30 REM by Richard Averill
40 REM for Archimedes only
50 REM (c) Acorn User January 1989
60 :
70 MODE 0
80 INPUT " 'CharDes' font file: "font
$
90 INPUT "Archimedes font file: "dest
$
100 out%=OPENOUT(dest%)
110 DIM code% 2000
120 SYS "OS_File",255,font%,code%
130 x%=32
140 FOR c%=code% TO code%+94
150 BPUT# out%,23
160 BPUT# out%,x%
170 FOR ra2%=c%+&44 TO c%+&2E4 STEP 96
180 BPUT# out%,?ra2%
190 NEXT
200 x%+=1
210 NEXT
220 CLOSE# out%
230 SYS "OS_File",&12,dest%,&FF7
240 PRINT "Process complete"
250 END

```

YELLOW PAGES

JOE'S JOTTINGS

See Usercard, page 66

Listing 1. Stack creator

```

10 REM Usercard Card compiler
20 REM by Joe Telford
30 REM for B/B+/M/C/A
40 REM (c) Acorn User January 1989
50 :
60 MODE 4
70 READ f$
80 PRINT "Stack is called "f$
90 :
100 PROCwritecard(f$)
110 :
120 REPEAT
130 READ cardno$
140 IF cardno$<>"END" THEN PROCwritecard(cardno$)
150 UNTIL cardno$="END"
160 PRINT "All cards written"
170 END
180 :
190 DEF PROCwritecard(f$)
200 PRINT "creating card"f$
210 a%=OPENOUT f$
220 PRINT "writing card"
230 REPEAT
240 READ t$
250 IF t$="RECORDS" READ x:PRINT# a%,t$,x:UNTIL 0
260 IF t$="FIND" READ txt$:PRINT# a%,t$,txt$:UNTIL 0
270 IF t$="CHECK" READ x,y:PRINT# a%,t$,x,y:UNTIL 0
280 IF t$="RADIO" READ x,y:PRINT# a%,t$,x,y:UNTIL 0
290 IF t$="FR" READ x,y,l,i,txt$,sx,sy,chr$,type:PRINT# a%,t$,x,y,l,i,txt$,sx,sy,chr$,type:UNTIL 0
300 IF t$="TB" OR t$="RB" READ x,y,l,w,t,s,a1,a2,b1,b2,txt$:PRINT# a%,t$,x,y,l,w,t,s,a1,a2,b1,b2,txt$:UNTIL 0
310 IF t$="R" READ x,y,l,w:PRINT# a%,t$,x,y,l,w:UNTIL 0
320 IF t$="D" READ x,y:PRINT# a%,t$,x,y:UNTIL 0
330 IF t$="M" READ x,y:PRINT# a%,t$,x,y:UNTIL 0
340 IF t$="T" READ x,y,i,txt$:PRINT# a%,t$,x,y,i,txt$:UNTIL 0
350 IF t$="F" READ x,y,l,txt$,x,y,l,w,type:PRINT# a%,t$,x,y,l,txt$,x,y,l,w,type:UNTIL 0
360 IF t$="FI" READ txt$:PRINT# a%,t$,txt$:UNTIL 0
370 IF t$="B" PROCreadbutton
380 PRINT# a%,t$
390 UNTIL t$="X"
400 CLOSE# a%
410 ENDPROC
420 :
430 DATA ENOS
440 DATA *
450 DATA RECORDS,23
460 DATA FIND,ENOSFND
470 DATA R,1,1,38,22
480 DATA T,15,1,0,Home Card
490 DATA R,1,1,38,2
500 DATA R,1,1,38,2.5
510 DATA T,6,7,0," 'E' Numbers"
520 DATA T,6,8,0," and Additives in Food"
530 DATA T,6,10,0," On test from Cleveland"
540 DATA T,6,11,0," High Technology Initiative"

```

```

550 DATA T,6,14,0," Ann Porter's Version"
560 DATA T,6,15,0,"on V1.00 UserCard - Sept '88"
570 DATA R,5,6,29,10
580 DATA TB,2,1,5,1,1,0,10,0,0,0,"Mouse"
590 DATA TB,28,1,8,1,1,0,9,0,0,0,"Keyboard"
600 DATA TB,2,18,4,1,1,0,255,0,0,0,"Exit"
610 DATA TB,7,18,12,1,1,0,13,0,0,0,"Change Stack"
620 DATA TB,20,18,13,1,1,0,2,0,0,0,"I< First Card"
630 DATA TB,2,20,15,1,1,0,7,0,0,0,"Print this card"
640 DATA TB,20,20,15,1,1,0,8,0,0,0,"Print all Cards"
650 DATA X
660 :
670 DATA ENOSBAC
680 DATA *
690 DATA R,1,1,38,22
700 DATA T,3,1,0,'E' Numbers and Additives in Food
710 DATA R,1,1,38,2
720 DATA R,1,1,38,2.5
730 DATA FR,1,5,6,1,E No,8,5,4,4
740 DATA R,8,5,4,1
750 DATA FR,14,5,22,1,Hyperactive sensitive,37,5,1,6
760 DATA CHECK,37,5
770 DATA FR,1,7,9,1,Name,11,7,28,5
780 DATA R,11,7,28,1
790 DATA FR,1,9,9,1,Found in,11,9,28,2
800 DATA R,11,9,28,1
810 DATA FR,1,11,9,1,Uses,11,11,28,3
820 DATA R,11,11,28,1
830 DATA FR,1,13,9,1,Comments,11,13,28,3
840 DATA R,11,13,28,1
850 DATA FR,1,15,9,1,Dangers,11,15,28,3
860 DATA R,11,15,28,1
870 DATA TB,2,18,4,1,1,0,1,0,0,0,"Home"
880 DATA TB,24,18,2,1,1,0,2,0,0,0,"I<"
890 DATA TB,27,18,2,1,1,0,5,0,0,0,"<<"
900 DATA TB,30,18,2,1,1,0,6,0,0,0,"??"
910 DATA TB,33,18,2,1,1,0,4,0,0,0,">>"
920 DATA TB,36,18,2,1,1,0,3,0,0,0,">|"
930 DATA TB,2,20,15,1,1,0,7,0,0,0,"Print this card"
940 DATA X
950 :
960 DATA ENOSFND
970 DATA *
980 DATA R,1,1,38,22
990 DATA T,3,1,0,'E' Numbers and Additives in Food
1000 DATA R,1,1,38,2
1010 DATA R,1,1,38,2.5
1020 DATA FR,1,5,6,1,E No,8,5,4,4
1030 DATA R,8,5,4,1
1040 DATA FR,14,5,22,1,Hyperactive sensitive,37,5,1,6
1050 DATA CHECK,37,5
1060 DATA FR,1,7,9,1,Name,11,7,28,5
1070 DATA R,11,7,28,1
1080 DATA FR,1,9,9,1,Found in,11,9,28,2
1090 DATA R,11,9,28,1
1100 DATA FR,1,11,9,1,Uses,11,11,28,3

```

Continued ►

YELLOW PAGES

JOE'S JOTTINGS

◀ Listing 1. Stack creator continued

```

1110 DATA R,11,11,28,1
1120 DATA FR,1,13,9,1,Comments,11,13,28,
3
1130 DATA R,11,13,28,1
1140 DATA FR,1,15,9,1,Dangers,11,15,28,
3
1150 DATA R,11,15,28,1
1160 DATA TB,2,18,4,1,1,0,1,0,0,0,"Home
"
1170 DATA TB,18,18,19,1,1,0,14,0,0,0,"F
ind matching cards"
1180 DATA TB,18,20,20,1,1,0,15,0,0,0,"P
rint matching cards"
1190 DATA RB,2,20,5,1,2,0,16,0,1,0,"Bri
ef"
1200 DATA X
1210 :
1220 DATA 1
1230 DATA ENOSBAC
1240 DATA FI,100
1250 DATA FI,CHECK
1260 DATA FI,Curcumin
1270 DATA FI,Fish fingers/curry powder/
+
1280 DATA FI,Yellow orange colouring
1290 DATA FI,Extract of Tumeric Root
1300 DATA FI,None confirmed
1310 DATA X
1320 :
1330 DATA 2
1340 DATA ENOSBAC
1350 DATA FI,101
1360 DATA FI,CHECK
1370 DATA FI,Riboflavin (Vitamin B2)
1380 DATA FI,Sauces/Cereals/Proc. Chees
e
1390 DATA FI,Involved in Energy Release
1400 DATA FI,Also found in meat/milk/ve
g
1410 DATA FI,None
1420 DATA X
1430 :
1440 DATA 3
1450 DATA ENOSBAC
1460 DATA FI,102
1470 DATA FI,CHECKIN
1480 DATA FI,Tartrazine
1490 DATA FI,Custard/Jellies/Fizzy Pop
1500 DATA FI,Artificial chemical dye
1510 DATA FI,Allergic symptoms possible
1520 DATA FI,to Asthma/Eczema sufferers
1530 DATA X
1540 :
1550 DATA 4
1560 DATA ENOSBAC
1570 DATA FI,104
1580 DATA FI,CHECKIN
1590 DATA FI,Quinoline Yellow
1600 DATA FI,Cakemix/fizzy-pop/
1610 DATA FI,Artificial chemical dye
1620 DATA FI,for colouring purposes
1630 DATA FI,to Asthma/Eczema sufferers
1640 DATA X
1650 :
1660 DATA 5
1670 DATA ENOSBAC
1680 DATA FI,107
1690 DATA FI,CHECKIN
1700 DATA FI,Yellow 2G
1710 DATA FI,Sauces/Sweets/Tinned veg.
1720 DATA FI,Artificial chemical dye
1730 DATA FI,Banned in USA & EEC
1740 DATA FI,to Asthma/Eczema sufferers
1750 DATA X

```

```

1760 :
1770 DATA 6
1780 DATA ENOSBAC
1790 DATA FI,110
1800 DATA FI,CHECKIN
1810 DATA FI,Sunset Yellow FCF
1820 DATA FI,Sauces/Cakes/Jams etc.
1830 DATA FI,Artificial chemical dye
1840 DATA FI,General Yellow colouring
1850 DATA FI,to Asthma/Eczema sufferers
1860 DATA X
1870 :
1880 DATA 7
1890 DATA ENOSBAC
1900 DATA FI,120
1910 DATA FI,CHECKIN
1920 DATA FI,Cochineal
1930 DATA FI,Cakes/Icing/Alcoholic Drin
k
1940 DATA FI,Red dye from cactus insect
s
1950 DATA FI,Not widely used - expensiv
e
1960 DATA FI,None known
1970 DATA X
1980 :
1990 DATA 8
2000 DATA ENOSBAC
2010 DATA FI,122
2020 DATA FI,CHECKIN
2030 DATA FI,Carmoisine
2040 DATA FI,Cakes/Sauces/Marzipan/Jam
2050 DATA FI,Artificial red dye
2060 DATA FI,Widely used
2070 DATA FI,to Asthma/Eczema sufferers
2080 DATA X
2090 :
2100 DATA 9
2110 DATA ENOSBAC
2120 DATA FI,123
2130 DATA FI,CHECKIN
2140 DATA FI,Amaranth
2150 DATA FI,Jam/Soups/Squash/Cakes
2160 DATA FI,Artificial purple-red dye
2170 DATA FI,Banned in USA
2180 DATA FI,to Asthma/Eczema sufferers
2190 DATA X
2200 :
2210 DATA 10
2220 DATA ENOSBAC
2230 DATA FI,124
2240 DATA FI,CHECKIN
2250 DATA FI,Ponceau 4R
2260 DATA FI,Sauces/Cake mix/Jam
2270 DATA FI,Artificial red dye
2280 DATA FI,Banned in USA
2290 DATA FI,to Asthma/Eczema sufferers
2300 DATA X
2310 :
2320 DATA 11
2330 DATA ENOSBAC
2340 DATA FI,127
2350 DATA FI,CHECKIN
2360 DATA FI,Erythrosine
2370 DATA FI,Glace-cherries/Salami
2380 DATA FI,Artificial pink-red dye
2390 DATA FI,Banned in USA
2400 DATA FI,may cause thyroid problems
2410 DATA X
2420 :
2430 DATA 12
2440 DATA ENOSBAC
2450 DATA FI,128
2460 DATA FI,CHECKIN

```

Continued ▶

YELLOW PAGES

JOE'S JOTTINGS

◀ Listing 1. Stack creator continued

2470 DATA FI,RED 2G
 2480 DATA FI,Sausages/Jam/Milk shakes
 2490 DATA FI,Artificial red dye
 2500 DATA FI,Banned in USA & EEC
 2510 DATA FI,may affect red blood cells
 2520 DATA X
 2530 :
 2540 DATA 13
 2550 DATA ENOSBAC
 2560 DATA FI,131
 2570 DATA FI,CHECKIN
 2580 DATA FI,Patent Blue V
 2590 DATA FI,Scotch eggs/sweets/ice cream
 2600 DATA FI,Artificial blue dye
 2610 DATA FI,May cause reactions:
 2620 DATA FI,Nausea, low blood pressure
 2630 DATA X
 2640 :
 2650 DATA 14
 2660 DATA ENOSBAC
 2670 DATA FI,132
 2680 DATA FI,CHECKIN
 2690 DATA FI,Indigo Carmine
 2700 DATA FI,Swiss roll/cake-decoration
 2710 DATA FI,Artificial blue dye
 2720 DATA FI,May cause reactions:
 2730 DATA FI,Nausea, low blood pressure
 2740 DATA X
 2750 :
 2760 DATA 15
 2770 DATA ENOSBAC
 2780 DATA FI,133
 2790 DATA FI,CHECKIN
 2800 DATA FI,Brilliant Blue FCF
 2810 DATA FI,Mint sauce/fizzy pop/peas
 2820 DATA FI,Artificial blue dye
 2830 DATA FI,Often mixed with E102
 2840 DATA FI,Poss allergic reaction.
 2850 DATA X
 2860 :
 2870 DATA 16
 2880 DATA ENOSBAC
 2890 DATA FI,142
 2900 DATA FI,CHECKIN
 2910 DATA FI,Acid Brilliant Green
 2920 DATA FI,Mint sauce/fizzy pop/peas
 2930 DATA FI,Artificial green dye
 2940 DATA FI,Banned in USA
 2950 DATA FI,Poss allergic reaction
 2960 DATA X
 2970 :
 2980 DATA 17
 2990 DATA ENOSBAC
 3000 DATA FI,150
 3010 DATA FI,CHECKIN
 3020 DATA FI,Caramel
 3030 DATA FI,Glace-cherries/Salami
 3040 DATA FI,Brown Colouring/flavouring
 3050 DATA FI,No definite risk shown but
 3060 DATA FI,Poss Vit. B6 deficiency
 3070 DATA X
 3080 :
 3090 DATA 18
 3100 DATA ENOSBAC
 3110 DATA FI,151
 3120 DATA FI,CHECKIN
 3130 DATA FI,Black PN
 3140 DATA FI,Brown Sauces/gravy granules
 3150 DATA FI,Artificial purple-black dye
 3160 DATA FI,Member of the 'Azo' dyes

3170 DATA FI,Poss allergic reaction
 3180 DATA X
 3190 :
 3200 DATA 19
 3210 DATA ENOSBAC
 3220 DATA FI,153
 3230 DATA FI,CHECKIN
 3240 DATA FI,Carbon Black
 3250 DATA FI,Liquorice/Choc flavours
 3260 DATA FI,dye made from burnt plants
 3270 DATA FI,Banned in USA
 3280 DATA FI,Poss link to skin cancers
 3290 DATA X
 3300 :
 3310 DATA 20
 3320 DATA ENOSBAC
 3330 DATA FI,154
 3340 DATA FI,CHECKIN
 3350 DATA FI,Brown FK
 3360 DATA FI,Crisps/Smoked fish/gravies
 3370 DATA FI,Artif. yellow/brown dye
 3380 DATA FI,Restricted use outside UK
 3390 DATA FI,Poss cancer & gene changes
 3400 DATA X
 3410 :
 3420 DATA 21
 3430 DATA ENOSBAC
 3440 DATA FI,155
 3450 DATA FI,CHECKIN
 3460 DATA FI,Brown HT
 3470 DATA FI,Pickles/Choc flavours
 3480 DATA FI,Artificial brown dye
 3490 DATA FI,Restricted use outside UK
 3500 DATA FI,Poss allergic reaction
 3510 DATA X
 3520 :
 3530 DATA 22
 3540 DATA ENOSBAC
 3550 DATA FI,160a
 3560 DATA FI,CHECK
 3570 DATA FI,Carotene (Alpha,Beta,Gamma)
 3580 DATA FI,Rice Pud/Salad Dressings
 3590 DATA FI,Natural yellow colouring
 3600 DATA FI,converted into Vit. A
 3610 DATA FI,None recorded
 3620 DATA X
 3630 :
 3640 DATA 23
 3650 DATA ENOSBAC
 3660 DATA FI,160b
 3670 DATA FI,CHECK
 3680 DATA FI,Annatto,Bixin,Norbixin
 3690 DATA FI,Dried Milk/Yoghurt/cake
 3700 DATA FI,Seed pod yellow colouring
 3710 DATA FI,Safe alternative to E102
 3720 DATA FI,None Recorded
 3730 DATA X
 3740 :
 3750 DATA END

Lack of space means that we cannot include the changes to UserCard which are necessary to enable its use with the AMX mouse. AMX owners might like to use the 'patch' we carried as Top of the List on page 127 of the June 1987 issue.

YELLOW PAGES

JOE'S JOTTINGS

Listing 2. Stack dealer

```

10 REM Usercard Runtime package
20 REM by Joe Telford
30 REM for B/B+/M/C/A
40 REM (c) Acorn User January 1988
50 :
60 REM set M%=1 for acorn VFS (mouse
rom)
70 :
80 MODE 129
90 CLOSE# 0
100 M%=0
110 VDU 19,3,0;0;
120 VDU 19,0,7;0;
130 VDU 19,1,0;0;
140 PROCsetup
150 PROCassemble
160 ERF=1
170 ON ERROR PROCerr
180 stack$=FNgetstack
190 fndcard$=stack$
200 CLS
210 file=FNload(stack$)
220 GCOL 4,0;VDU 5:IF M%<>1 MOVE px%,p
y%:PRINT c$ ELSE *POINTER
230 ON ERROR OFF
240 ERF=2
250 ON ERROR PROCerr
260 :
270 REPEAT
280 actn=0
290 REPEAT
300 PROCmoveptr
310 UNTIL INKEY(0)=13
320 IF M%=1 px%=ADVAL7:py%=ADVAL8:*POI
NTER 2
330 but=FNcheckbuttons
340 IF but=-1 THEN UNTIL 0
350 SOUND 0,-15,5,0
360 IF b%(but,4)=1 OR b%(but,4)=3 THEN
PROCinvert(b%(but,0),b%(but,1),b%(but,2
)-b%(but,0),b%(but,3)-b%(but,1))
370 actn=b%(but,6)
380 IF actn=1 THEN PROCrenew:CLS:file=
FNload(stack$):PROCdc:UNTIL 0
390 IF actn=2 THEN card=1:PROCget(card
):PROCdc:UNTIL 0
400 IF actn=3 THEN card=last:PROCget(c
ard):PROCdc:UNTIL 0
410 IF actn=4 THEN PROCfwd:UNTIL 0
420 IF actn=5 THEN PROCbwd:UNTIL 0
430 IF actn=6 THEN PROCrenew:CLS:file=
FNload(fndcard$):PROCdc:UNTIL 0
440 IF actn=7 THEN PROCprinter:PROCdc:
PROCdump:PROCdc:UNTIL 0
450 IF actn=8 THEN PROCdumpallcards:UN
TIL 0
460 IF actn=9 THEN PROCdc:M%=0:PROCdc:
*MOUSE 0
470 IF actn=10 THEN PROCdc:M%=1:PROCdc
:*MOUSE 1
480 IF actn=11 THEN PROCget(b%(but,7))
490 IF actn=12 THEN PROCtabularise
500 IF actn=13 THEN RUN
510 IF actn=14 THEN PROCgo(0,brief)
520 IF actn=15 THEN PROCgo(1,brief)
530 IF actn=16 THEN brief=1-brief:PROC
bradio
540 UNTIL actn=255:FX 12,0
550 VDU 4:FX 4,0
560 dummy=FNok
570 MODE 7:*BASIC
580 END
590 :
600 DEF PROCbradio
610 PROCdc
620 VDU 4
630 PRINT TAB(b%(but,0) DIV 32+1,(1024
-b%(but,1)) DIV 32-1);VDU (132+brief)
640 VDU 5
650 PROCdc

```

```

660 ENDPROC
670 :
680 DEF PROCdc
690 IF M%=1 THEN ENDPROC
700 VDU 5:GCOL 4,0
710 MOVE px%,py%:PRINT c$
720 ENDPROC
730 :
740 DEF PROCfwd
750 IF (card+1)>last THEN PROCem("End
of Stack - Click a button"):ENDPROC
760 PROCget(card+1):IF file>0 THEN car
d=card+1
770 IF file=0 THEN PROCem("No card - C
lick a button"):A$=GET$:PROCget(card)
780 PROCdc:ENDPROC
790 :
800 PROCget(card+1):IF file>0 THEN car
d=card+1
810 IF file=0 THEN PROCem("No card - C
lick a button"):A$=GET$:PROCget(card)
820 PROCdc:ENDPROC
830 :
840 DEF PROCbwd
850 IF (card-1)<1 THEN PROCem("Front o
f Stack - Click a button"):ENDPROC
860 card=card-1
870 PROCget(card)
880 IF file=0 THEN PROCem("No card - C
lick a button"):card=card+1:PROCget(card
)
890 PROCdc:ENDPROC
900 :
910 DEF PROCget(c)
920 fld=0:PROCrenew:CLS
930 file=FNload(STR#c)
940 ENDPROC
950 :
960 DEF PROCerr
970 VDU 3:CLOSE# 0
980 IF ERR=17 AND ERF=2 PROCem("Action
Cancelled"):ENDPROC
990 IF ERR=17 AND ERF=1 THEN CLS:ENDPR
OC
1000 IF ERR=17 AND ERF=3 PROCem("Action
Cancelled"):PROCget(card):PROCdc:ERF=2:
ENDPROC
1010 REPORT:PRINT" at ";ERL:FX 12 0
1020 END
1030 :
1040 DEF PROCinvert(x,y,l,w)
1050 GCOL 4,0
1060 PROC(x,y,l,w,1)
1070 A$=INKEY$(20)
1080 PROC(x,y,l,w,1)
1090 GCOL 0,1
1100 ENDPROC
1110 :
1120 DEF FNcheckbuttons
1130 LOCAL bu,flag
1140 IF tbutton=-1 THEN =-1
1150 flag=-1
1160 FOR bu=0 TO tbutton
1170 IF px%>b%(bu,0) THEN IF px%<b%(bu,
2) THEN IF py%>b%(bu,1) THEN IF py%<b%(b
u,3) THEN flag=bu:bu=tbutton
1180 NEXT
1190 =flag
1200 :
1210 DEF PROCmoveptr
1220 GCOL 4,0
1230 IF INKEY=56 THEN *SDUMP+
1240 IF M%=1 THEN OSCLI("POINTER"):ENDP
ROC
1250 MOVE px%,py%
1260 IF INKEY=58 AND py%<1024 PRINT c$:
py%=py%+8:MOVE px%,py%:PRINT c$:MOVE px%
,py%
1270 IF INKEY=42 AND py%>16 PRINT c$:py
%=py%-8:MOVE px%,py%:PRINT c$:MOVE px%,p

```

Continued ►

YELLOW PAGES

JOE'S JOTTINGS

◀ Listing 2. Stack dealer continued

```

y%
1280 IF INKEY=122 AND px%<1264 PRINT c%
:px%=px%+8:MOVE px%,py%:PRINT c%:MOVE px
%,py%
1290 IF INKEY=26 AND px%>0 PRINT c%:px%
=px%-8:MOVE px%,py%:PRINT c%:MOVE px%,py
%
1300 ENDPROC
1310 :
1320 DEF PROCsetup
1330 py%=512:px%=640
1340 DIM f$(20),f%(20,3),b%(20,9)
1350 VDU 23,128,248,192,160,144,136,4,2
,1
1360 VDU 23,130,255,129,129,129,129,129
,129,255
1370 VDU 23,131,255,194,165,153,153,165
,194,255
1380 VDU 23,132,60,66,129,129,129,129,6
6,60
1390 VDU 23,133,60,66,153,189,189,153,6
6,60
1400 c%=CHR$128
1410 last=0
1420 card=1
1430 brief=0
1440 PROCvalid
1450 PROCrenew
1460 ENDPROC
1470 :
1480 DEF PROCrenew
1490 tfield=-1:tbutton=-1
1500 ENDPROC
1510 :
1520 DEF PROCRC(x,y,l,w,f)
1530 MOVE x,y:IF f=0 DRAW x+1,y:DRAW x+
1,y+w:DRAW x,y+w:DRAW x,y:ENDPROC
1540 MOVE x+1,y:PLOT 85,x,y+w-4:MOVE x,
y+w:MOVE x+1,y+4:PLOT 85,x+1,y+w:MOVE x,
y:ENDPROC
1550 :
1560 DEF FNgetstack
1570 REPEAT:REPEAT
1580 PROCdrawwindow(8,8,22,5,1)
1590 PRINT TAB(12,9);"Load Which Stack?"
"
1600 PRINT TAB(9,13);"or RETURN to Data
logue"
1610 PRINT TAB(16,11);:f$=FNgpi(10,0,a1
1%)
1620 IF f$="" THEN PROCcat:CLS:UNTIL 0
1630 UNTIL f$>" ":a%=OPENUP f$:CLOSE# a
%
1640 IF a%=0 THEN PROCem("No such file!
Try cataloging!"):UNTIL 0
1650 UNTIL TRUE:=f$
1660 :
1670 DEF PROCcat
1680 CLS
1690 %CAT
1700 PROCmess("Hit SPACE to return to S
tack Loader.",0,0)
1710 REPEAT UNTIL GET=32:CLS
1720 ENDPROC
1730 :
1740 DEF FNload(f%)
1750 LOCAL t$,a%,file
1760 a%=OPENUP f$:IF a%=0 THEN =0
1770 INPUT# a%,t$:IF t$<>"*" THEN file=
FNload(t%)
1780 VDU 4
1790 REPEAT
1800 INPUT# a%,t%
1810 IF t$="CHECK" THEN PROC1check
1820 IF t$="FI" THEN PROC1data
1830 IF t$="RADIO" THEN PROC1radio
1840 IF t$="TB" THEN PROC1tbut
1850 IF t$="RB" THEN PROC1rbut
1860 IF t$="FR" THEN PROC1frect
1870 IF t$="R" THEN PROC1rect
1880 IF t$="B" THEN PROC1button
1890 IF t$="F" THEN PROC1field
1900 IF t$="T" THEN PROC1text
1910 IF t$="D" THEN PROC1draw
1920 IF t$="M" THEN PROC1move
1930 IF t$="RECORDS" THEN INPUT# a%,las
t
1940 IF t$="FIND" THEN INPUT# a%,fndcar
d$
1950 UNTIL t$="X"
1960 VDU 5
1970 CLOSE# a%
1980 =a%
1990 :
2000 DEF PROC1data
2010 LOCAL txt$
2020 INPUT# a%,txt$
2030 IF txt$="CHECK" THEN PRINTTAB(f%{(f
ld,0),f%(fld,1)};:VDU 130:fld=fld+1:ENDP
ROC
2040 IF txt$="CHECKIN" THEN PRINTTAB(f%
{fld,0),f%(fld,1)};:VDU 131:fld=fld+1:EN
DPROC
2050 IF txt$="RADIO" THEN PRINTTAB(f%{(f
ld,0),f%(fld,1)};:VDU 132:fld=fld+1:ENDP
ROC
2060 IF txt$="RADIOIN" THEN PRINTTAB(f%
{fld,0),f%(fld,1)};:VDU 133:fld=fld+1:EN
DPROC
2070 PRINT TAB(f%(fld,0),f%(fld,1));LEF
T$(txt$,f%(fld,2))
2080 fld=fld+1
2090 ENDPROC
2100 :
2110 DEF PROC1check
2120 INPUT# a%,x,y
2130 PRINT TAB(x,y);
2140 VDU 130
2150 ENDPROC
2160 :
2170 DEF PROC1radio
2180 INPUT# a%,x,y
2190 PRINT TAB(x,y);
2200 VDU 132
2210 ENDPROC
2220 :
2230 DEF PROC1rect
2240 INPUT# a%,x,y,l,w
2250 PROCRC(x*32-8,1024-(y+w)*32-8,1*32+
16,w*32+16,0)
2260 ENDPROC
2270 :
2280 DEF PROC1text
2290 INPUT# a%,x,y,i,txt$
2300 IF i=1 THEN COLOUR 131:COLOUR 0
2310 PRINT TAB(x,y);txt$;";"
2320 COLOUR 128:COLOUR 3
2330 ENDPROC
2340 :
2350 DEF PROC1frect
2360 INPUT# a%,x,y,l,i,txt$,sx,sy,chr$,
type
2370 PROCRC(x*32-8,1024-(y+1)*32-8,1*32+
16,32+16,0)
2380 IF i=1 THEN COLOUR 131:COLOUR 0
2390 PRINT TAB(x,y);txt$;";"
2400 COLOUR 128:COLOUR 3
2410 tfield=tfield+1
2420 f$(tfield)=txt$
2430 f%(tfield,0)=sx
2440 f%(tfield,1)=sy
2450 f%(tfield,2)=chr$
2460 f%(tfield,3)=type
2470 ENDPROC
2480 :
2490 DEF PROC1tbut
2500 INPUT# a%,x,y,l,w,t,s,a1,a2,b1,b2,
txt$
2510 PROCRC(x*32-8,1024-(y+1)*32-8,1*32+
16,32+16,0)
2520 PRINT TAB(x,y);txt$

```

Continued ▶

YELLOW PAGES

JOE'S JOTTINGS

◀ Listing 2. Stack dealer continued

```

2530 tbutton=tbutton+1
2540 b%(tbutton,0)=x#32-8
2550 b%(tbutton,1)=1024-(y+w)#32-8
2560 b%(tbutton,2)=(x+1)#32+8
2570 b%(tbutton,3)=1024-(y#32)+8
2580 b%(tbutton,4)=t
2590 b%(tbutton,5)=s
2600 b%(tbutton,6)=a1
2610 b%(tbutton,7)=a2
2620 b%(tbutton,8)=b1
2630 b%(tbutton,9)=b2
2640 ENDPROC
2650 :
2660 DEF PROC1rbut
2670 INPUT# a%,x,y,l,w,t,s,a1,a2,b1,b2,
txt$
2680 PRINT TAB(x,y);txt$;VDU 32,132+br
ief
2690 tbutton=tbutton+1
2700 b%(tbutton,0)=(x+1+1)#32-8
2710 b%(tbutton,1)=1024-(y+w)#32-8
2720 b%(tbutton,2)=(x+1+2)#32+8
2730 b%(tbutton,3)=1024-(y#32)+8
2740 b%(tbutton,4)=t
2750 b%(tbutton,5)=s
2760 b%(tbutton,6)=a1
2770 b%(tbutton,7)=a2
2780 b%(tbutton,8)=b1
2790 b%(tbutton,9)=b2
2800 ENDPROC
2810 :
2820 DEF PROC1move
2830 INPUT# a%,x,y
2840 MOVE x,y
2850 ENDPROC
2860 :
2870 DEF PROC1draw
2880 INPUT# a%,x,y
2890 DRAW x,y
2900 ENDPROC
2910 :
2920 DEF PROCmess(t$,x,y)
2930 PROCdrawwindow(x,y,LEN(t$),0,1)
2940 COLOUR 128:COLOUR 7
2950 PRINT TAB(x+1,y+1);t$;
2960 ENDPROC
2970 :
2980 DEF FNok
2990 SOUND 1,1,4,10
3000 PROCmess("Press a button to exit o
r ESCAPE",4,29)
3010 dummy=GET
3020 PROCcem
3030 =-1
3040 :
3050 DEF PROCdrawwindow(x,y,w,n%,f)
3060 LOCAL a
3070 GCOL 0,0:PROC(x#32,1024-((y+n%+3)
#32), (w+2)#32, (n%+3)#32,1)
3080 IF f=0 THEN ENDPROC
3090 GCOL 1,1:PROC(x#32+16,1024-((y+n%
+2)#32+16), (w+1)#32, (n%+2)#32,0)
3100 PROC(x#32+24,1024-((y+n%+2)#32+24
), (w+1)#32,8,1)
3110 PROC((x+w+2)#32-16,1024-((y+n%+2)
#32+24),8, (n%+2)#32,1)
3120 ENDPROC
3130 :
3140 DEF FNgpi(len,effect,valid$)
3150 LOCAL a%,b
3160 a$=""
3170 PRINT STRING$(len,".");STRING$(len
,CHR$(8));:FX 15,1
3180 b=GET:IF b=13 THEN =a$
3190 IF b<32 THEN 3180
3200 IF b=127 AND a$="" THEN 3180
3210 IF b=127 a$=LEFT$(a$,LEN(a$)-1):PR
INTCHR$b;".":CHR$(8);:GOTO 3180
3220 IF effect=0 THEN 3250
3230 IF effect=1 b=b AND 223 ELSE b=b 0

```

```

R 32
3240 IF effect=3 AND(RIGHT$(a$,1)=" " 0
R a$="") b=b AND 223
3250 IF LEN(a$)=len OR INSTR(valid$,CHR
$b)=0 SOUND 1,1,4,20:GOTO 3180
3260 PRINT CHR$b;:a$=a$+CHR$b:GOTO 3180
3270 :
3280 DEF PROCvalid
3290 cap$=" ABCDEFGHIJKLMNOPQRSTUVWXYZ"
3300 low$=" abcdefghijklmnopqrstuvwxyz"
3310 nos$=".0123456789"
3320 pun$=" _!##%&'()*=?/:+;.,<>"+CHR$
34
3330 all$=nos$+cap$+low$+pun$
3340 ENDPROC
3350 :
3360 DEF PROCcem(t$)
3370 SOUND 1,1,4,10
3380 PROCmess(t$,20-INT((LENt$)/2)-1,29
)
3390 A$=INKEY$(200)
3400 PROCcem
3410 ENDPROC
3420 :
3430 DEF PROCcem
3440 VDU 4
3450 PRINT TAB(0,29);STRING$(119," ");
3460 VDU 5
3470 ENDPROC
3480 :
3490 DEF PROCdump
3500 CALL start
3510 ENDPROC
3520 :
3530 DEF PROCdumpallcards
3540 PROCprinter
3550 LOCAL c
3560 file=FNload(stack$)
3570 PROCdump
3580 FOR c=1 TO last
3590 PROCget(c)
3600 PROCdump
3610 NEXT
3620 CLS:file=FNload(stack$)
3630 PROCdc
3640 ENDPROC
3650 :
3660 DEF PROCprinter
3670 PROCmess("Setup printer then press
a button",3,29)
3680 REPEAT UNTIL GET
3690 PROCcem
3700 ENDPROC
3710 :
3720 DEF PROCgo(p,b)
3730 ERF=3
3740 IF p=1 THEN PROCprinter
3750 LOCAL c,match,hit
3760 hit=0
3770 target$=FNwhat
3780 IF target$="" THEN PROCget(card):P
ROCDc:ENDPROC
3790 IF b=1 VDU 4:CLS:VDU3-p:PRINT "Sea
rching for: "target$
3800 FOR c=1 TO last
3810 IF b=0 PROCmess("Searching Card: "
+STR$c,11,29)
3820 match=FNsearchget(c,target$,b)
3830 IF match=TRUE AND b=0 THEN PROCget
(c):hit=c
3840 IF match=TRUE AND b=1 THEN PRINT"f
ound: ";brief$
3850 IF match=TRUE AND p=1 AND b=0 THEN
PROCdump
3860 IF match=TRUE AND p=0 AND b=0 THEN
PROCsf(" Press a button for next card
")
3870 NEXT
3880 VDU 3
3890 PROCsf("No more cards - Press a b

```

Continued ▶

YELLOW PAGES

JOE'S JOTTINGS

◀ Listing 2. Stack dealer continued

```

utton")
3900 IF hit>0 THEN card=hit
3910 PROCget(card):PROCdc
3920 ERF=2
3930 ENDPROC
3940 :
3950 DEF FNwhat
3960 VDU 4
3970 PROCdrawwindow(8,8,22,5,1)
3980 PRINT TAB(14,9);"Search for?"
3990 PRINT TAB(11,13);"or RETURN to can
cel"
4000 PRINT TAB(9,11);
4010 =FNgpi(22,0,all%)
4020 :
4030 DEF PROCsfm(t%)
4040 PROCcem
4050 PROCmess(t%,5,29)
4060 REPEAT UNTIL GET
4070 PROCcem
4080 ENDPROC
4090 :
4100 DEF FNsearchget(c,target%,b)
4110 =FNgetload(STR$c,target%,b)
4120 :
4130 DEF FNgetload(f%,target%,b)
4140 LOCAL t%,a%,flag%,x%,cfld
4150 cfld=0:brief$=""
4160 a%=OPENUP f%:IF a%=0 THEN =0
4170 INPUT# a%,t%:VDU 4:flag=0
4180 REPEAT:INPUT# a%,t%
4190 IF t%="CHECK" THEN INPUT# a%,x%,x%:U
NTIL 0
4200 IF t%="RADIO" THEN INPUT# a%,x%,x%:U
NTIL 0
4210 IF t%="TB" THEN INPUT# a%,x%,x%,x%,
x%,x%,x%,x%,x%:UNTIL 0
4220 IF t%="FR" THEN INPUT# a%,x%,x%,x%,
x%,x%,x%,x%:UNTIL 0
4230 IF t%="R" THEN INPUT# a%,x%,x%,x%:U
NTIL 0
4240 IF t%="B" THEN UNTIL 0
4250 IF t%="F" THEN UNTIL 0
4260 IF t%="T" THEN INPUT# a%,x%,x%,x%:
UNTIL 0
4270 IF t%="D" THEN INPUT# a%,x%,y%:UNTIL
0
4280 IF t%="M" THEN INPUT# a%,x%,y%:UNTIL
0
4290 IF t%="RECORDS" THEN INPUT# a%,x%:U
NTIL 0
4300 IF t%="FIND" THEN INPUT# a%,x%:UNTIL
0
4310 IF t%="FI" THEN flag=FNcompdata(ta
rget%,b)
4320 UNTIL t%="X" OR flag=TRUE
4330 CLOSE# a%:=flag
4340 :
4350 DEF FNcompdata(t%,b):LOCAL txt%,fl
ag
4360 INPUT# a%,txt%:tt%=txt%:IF tt%="CH
ECK" THEN tt%=""
4370 IF tt%="CHECKIN" THEN tt%="X"
4380 IF cfld<3 THEN brief$=brief$+tt%+
/"icfld=cfld+1
4390 IF LENbrief$ >=73 AND p=1 THEN bri
ef$=LEFT$(brief$,72):cfld=3
4400 IF LENbrief$ >=33 AND p=0 THEN bri
ef$=LEFT$(brief$,32):cfld=3
4410 IF INSTR(txt%,t%)>0 THEN flag=TRUE
4420 =flag
4430 :
4440 DEF PROCassemble
4450 DIM start &110
4460 OSWORD=&FFF1
4470 OSWRCH=&FFEE
4480 byte=&70
4490 pk=&71
4500 Vlo=&72
4510 Vhi=&73
4520 Hlo=&74
4530 Hhi=&75
4540 Vblo=&76
4550 Vbhi=&77
4560 pixel=&78
4570 FOR pass=0 TO 3 STEP 3
4580 PX=start
4590 LOPT 0
4600 .start
4610 LDA #25:JSR OSWRCH
4620 LDA #4:JSR OSWRCH
4630 LDX #4
4640 .olop
4650 LDA #0:JSR OSWRCH
4660 DEX
4670 BEQ oloop
4680 LDA #29:JSR OSWRCH
4690 LDA #4:JSR OSWRCH
4700 LDX #4
4710 .Aloop
4720 LDA #0:JSR OSWRCH
4730 DEX
4740 BEQ Aloop
4750 LDA #2:JSR OSWRCH
4760 JSR out1:LDA #27:JSR OSWRCH
4770 JSR out1:LDA #65:JSR OSWRCH
4780 JSR out1:LDA #8:JSR OSWRCH
4790 JSR out1:LDA #10:JSR OSWRCH
4800 :
4810 LDA #1020 DIV 256:STA Vhi
4820 LDA #1020 MOD 256:STA Vlo
4830 .nextrow
4840 JSR startrow
4850 LDA #0:STA Hhi:STA Hlo
4860 .rowloop
4870 LDA #0:STA byte:STA pk
4880 .pkloop
4890 SEC
4900 LDA Vlo:SBC pk:STA Vblo
4910 LDA Vhi:SBC #0:STA Vbhi
4920 LDA #9:LDX #Hlo:LDY #0:JSR OSWORD
4930 LDA pixel:BEQ over
4940 LDA #1:STA pixel
4950 .over
4960 CLC:ROL byte
4970 CLC:LDA byte:ADC pixel:STA byte
4980 CLC:LDA pk:ADC #4:STA pk
4990 CMP #32:BNE pkloop
5000 JSR out1:LDA byte:JSR OSWRCH
5010 JSR out1:LDA byte:JSR OSWRCH
5020 CLC
5030 LDA Hlo:ADC #4:STA Hlo
5040 LDA Hhi:ADC #0:STA Hhi
5050 CMP #5
5060 BNE rowloop
5070 JSR out1:LDA #10:JSR OSWRCH
5080 SEC
5090 LDA Vlo:SBC #32:STA Vlo
5100 LDA Vhi:SBC #0:STA Vhi
5110 BMI over2
5120 JMP nextrow
5130 .over2
5140 JSR out1:LDA #27:JSR OSWRCH
5150 JSR out1:LDA #64:JSR OSWRCH
5160 LDA #3:JSR OSWRCH
5170 RTS
5180 .out1
5190 LDA #1:JSR OSWRCH
5200 RTS
5210 :
5220 .startrow
5230 JSR out1:LDA #27:JSR OSWRCH
5240 JSR out1:LDA #76:JSR OSWRCH
5250 JSR out1:LDA #128:JSR OSWRCH
5260 JSR out1:LDA #2:JSR OSWRCH
5270 RTS
5280 J
5290 NEXT
5300 ENDPROC

```

YELLOW PAGES

GRAPHICS

See Maps, page 85

Listing 1. Maps

```

10 REM Listing 1: Maps
20 REM by Peter Voke
30 REM for BBC B/B+/M/C/E
40 REM (c) Acorn User Janua
ry 1988
50 :
60 MODE 1:HIMEM=&1F00:DIM C
(3)
70 REPEAT:VDU 4,20,12,10
80 INPUT "RANDOM SEED",S%
90 IF S%>0 S%=RND(-S%) ELSE
S%=RND(-TIME)
100 CLS
110 VDU 19,0,0;0;C(0)=4
120 VDU 19,3,4;0;C(3)=5
130 VDU 19,2,3;0;C(2)=2
140 VDU 19,1,2;0;C(1)=3
150 VDU 23,224,0,20,0,85,0,8
5,0,0
160 VDU 23,225,0,0,170,0,170
,0,40,0
170 FOR I%=226 TO 229
180 VDU 23,I%,RND(64),RND(64
),RND(64),RND(64),RND(64),RND(
64),RND(64),RND(64)
190 NEXT

200 VDU 23,230,0,0,0,16,0,0,
0,0
210 VDU 5:GCOL 0,3:FOR Y%=8
TO 1024 STEP 12:MOVE 0,Y%:DRAW
1280,Y%:NEXT
220 ?&1F01=1:?&1F02=2:FOR I%
=3 TO 10
230 IF I%&1EFF=2:I%?&1F00=R
ND(3) ELSE I%?&1F00=2
240 NEXT
250 A%=1:B%=16+RND(31):R%=4+
RND(2)
260 FOR X%=4 TO 76
270 A%=A%+RND(R%)-3:B%=B%+RN
D(7)-4
280 IF A%<-1:A%=1:B%=16+RND(
31)
290 IF A%>24:A%=A%-1
300 IF B%+A%>60:B%=B%-2
310 IF B%-A%<4:B%=B%+2
320 IF A%>76-X%:A%=A%-2
330 IF A%<=0 THEN B%=16+RND(
31):GOTO 450
340 FOR Z%=-A% TO A%:Y%=B%+Z
%
350 I%=X%*16+RND(16):J%=Y%*1
6+RND(16)
360 GCOL 0,1
370 MOVE I%,J%:IF A%<2 VDU 2
30:GOTO 420
380 IF ABS(Z%)=A%:VDU 225+RN
D(4):GOTO 420
390 GCOL 0,?(&1F01+(A%+1-ABS
(Z%))/8):VDU 225
400 VDU 8
410 GCOL 0,?(&1F01+(A%+5-ABS
(Z%))/8):VDU 224
420 NEXT:IF RND(8)<8 THEN 45
0
430 IF B%-A%>30:MOVE I%,RND(
512):VDU 230
440 IF B%+A%<30:MOVE I%,1024
-RND(512):VDU 230
450 NEXT
460 *FX 15
470 REPEAT:Z=GET-48
480 IF Z>-1 AND Z<4 THEN C(Z
)=(C(Z)+1) MOD 8:VDU 19,Z,C(Z
):
490 UNTIL Z>9
500 UNTIL 0

```

Listing 2. Planets

```

10 REM Listing 2: Planets
20 REM by Peter Voke
30 REM for BBC B/B+/M/C/E
40 REM (c) Acorn User Janua
ry 1989
50 :
60 MODE 7
70 INPUT "Seed Number",s%:S
%&RND(-s%)
80 PRINT""Planet Type:"""
M V E M J S U N P""1 2 3 4 5
6 7 8 9"
90 INPUT T%:IF T%<1 OR T%>9
THEN 80
100 INPUT "Subtype 1 TO 4:"t
%
110 IF t%<1 OR t%>4 THEN 100
120 IF T%>4 AND T%<9:Q%=t%+(
T%-5)*4:INPUT "Moon Type 1 TO
4:"t%
130 IF Q%>12 Q%=Q%-4
140 R%=(T%-1)*4+t%
150 PRINT""Terrain:"""1. con
toured""2. flat""3. sea"
160 INPUT L%:IF L%<1 OR L%>3
THEN 150
170 B%=2:IF L%=2 THEN B%=3
180 PRINT""1. unbroken""2.
broken"
190 IF L%=2 PRINT "3. recedi
ng"
200 INPUT G%:IF G%>3 OR G%<1
THEN 180
210 H%=64:IF L%=3:H%=0
220 RESTORE (1320+R%*10)
230 READ C1,C2,C3,C4,C5,C6,C
7,C8,C9,C10
240 IF L%=3 THEN C9=C1:C1=C3
:C2=C3
250 DX%=RND(8)*12
260 V%=H%/4
270 MODE 2:VDU 23;11;0;0;0;
280 PROCsky
290 PROCground
300 IF H% PROChills
310 IF R%>8 AND R%<12 THEN P
ROCdwell
320 *FX15 1
330 U=GET:RUN
340 :
350 DEF PROCsky
360 IF C5=0 AND C6=0:GCOL 0,
C8:FOR I%=1 TO 50:PLOT 69,RND(
1280),RND(512)+512:NEXT:PROCP1
anet:ENDPROC

370 PROCplanet
380 GCOL 1,C5
390 MOVE 0,512:MOVE 1280,512
400 PLOT 85,1,1024:PLOT 85,1
280,1024
410 GCOL 0,C6
420 FOR Y%=512 TO 1024 STEP
12
430 MOVE 0,Y%:DRAW 1280,Y%
440 NEXT
450 ENDPROC
460 :
470 DEF PROChills
480 J%=512:K%=0:Y%=512+RND(H
%)
490 X%=K%*320
500 MOVE X%,Y%:MOVE X%,J%
510 REPEAT U%=X%:W%=Y%
520 X%=X%+DX%
530 Y%=Y%+RND(V%)-V%/2
540 IF Y%<J%:Y%=1024-Y%
550 GCOL 0,C9
560 PLOT 85,X%,Y%:PLOT 85,X%
,J%
570 GCOL 0,C10
580 MOVE U%,W%+4
590 DRAW X%,Y%+4
600 MOVE X%,J%
610 UNTIL X%>1280
620 K%=K%+1:Y%=512-K%*8:V%=V
%*2:J%=Y%
630 IF K%<4 AND RND(2)=1 THE
N 490
640 ENDPROC
650 :
660 DEF PROCground
670 GCOL 0,C4
680 GCOL 0,C4
690 MOVE 0,508:DRAW 1280,508
700 IF C1:GCOL 0,C1:FOR Y%=0
TO 504 STEP 8:MOVE 0,Y%:DRAW
1280,Y%:NEXT
710 IF C2:GCOL 0,C2:FOR Y%=4
TO 504 STEP 8:MOVE 0,Y%:DRAW
1280,Y%:NEXT
720 IF G%=3:O%=RND(1280):GCO
L 0,C4:MOVE 0,504:MOVE O%-8*64
0,0:PLOT 85,O%-640,504:FOR X%=-
640 TO 640 STEP 16:MOVE O%+X%
,504:DRAW O%+8*X%,0:NEXT:MOVE
1280,504:PLOT 85,O%+640,504:EN
DPROC
730 I%=RND(64)
740 FOR K%=15 TO 1 STEP-1
750 IF K% MOD 2=0:GCOL 0,C3:
ELSE GCOL 0,C4
760 S%=1280/(2*K%+1):Y%=548-
S%
770 X%=S%:MOVE 0,Y%
780 FOR J%=-K% TO K%
790 IF L%>1:D%=0:ELSE D%=(K%
-J%+I%) MOD 8*S%/32
800 DX%=D%*(1% MOD 2*2-1)
810 IF G%=1:DRAW X%+S%,Y%-D%
:ELSE MOVE RND(1280),Y%:PLOT 1
,RND(S%*4)-S%*2,-D%/2
820 X%=X%+S%
830 NEXT:NEXT
840 ENDPROC
850 :
860 DEF FNC(C%)
870 =(C% AND 1)+(C% AND 2)*2
+(C% AND 4)*4+(C% AND 8)*8
880 :
890 DEF PROCplanet
900 LOCAL A%,B%
910 IF R%>32:ENDPROC
920 IF R%<17 CA=3:CB=3:CC=3:
r%=350-R%*16:GOTO 950
930 RESTORE (1690+Q%*10):REA
D CA,CB,CC
940 r%=150+RND(256)
950 x%=RND(1280):y%=500+RND(
256)
960 z%=0
970 IF y%>512:z%=512-y%:IF y
%-r%>512:z%=-r%
980 FOR Y%=z% TO r% STEP 4
990 X%=SQR(r%*r%-Y%*Y%)+8
1000 A%=RND(2*X%)-X%
1010 B%=RND(2*X%)-X%
1020 IF B%<A%:C%=A%:A%=B%:B%=
C%
1030 MOVE x%-X%,y%+Y%
1040 GCOL 0,CA:DRAW x%+A%,y%+
Y%
1050 GCOL 0,CB:DRAW x%+B%,y%+
Y%
1060 GCOL 0,CC:DRAW x%+X%,y%+
Y%
1070 NEXT
1080 IF R%<21 ENDPROC
1090 GCOL 0,7
1100 o%=RND(1024)
1110 MOVE x%+o%,1024:DRAW x%-
o%*(y%-512)/(1024-y%),512
1120 ENDPROC
1130 :
1140 DEF PROCdwell
1150 IF L%=3 ENDPROC

```

Continued ►

YELLOW PAGES

GRAPHICS

Listing 2. Planets continued

```

1160 MOVE 320,500
1170 FOR I%=1 TO 9
1180 J%=RND(8):RESTORE (1820+
J%*10)
1190 READ X1,Y1,X2,Y2,X3,C
1200 X1=X1*4:Y1=Y1*4
1210 X2=X2*4:Y2=Y2*4:X3=X3*4
1220 IF C:GCOL 0,0:ELSE GCOL
0,7
1230 PLOT 1,X1,Y1:PLOT 1,X2,Y
2
1240 PLOT 1,X3,-Y1-Y2:PLOT 1,
-X1-X2-X3,0
1250 GCOL 0,RND(4)
1260 PLOT 0,8,4:PLOT 0,X1,Y1-
8
1270 PLOT 81,X2+X3-16,8-Y1
1280 PLOT 81,-X3,Y1+Y2-8
1290 PLOT 0,8-X1-X2,4-Y1-Y2
1300 PLOT 0,RND(256)-128,(RND
(2)-1)*-4
1310 NEXT:ENDPROC
1320 REM line 220 must point
here
1330 DATA 7,3,7,4,0,0,0,3,0,6
:REM MERC
1340 DATA 3,1,3,1,0,0,0,7,0,5
1350 DATA 0,3,3,4,0,0,0,7,4,6
1360 DATA 4,4,3,5,0,0,0,6,4,1
1370 DATA 7,7,6,1,6,1,7,0,0,6
:REM VENUS
1380 DATA 7,6,2,5,6,4,6,0,5,0
1390 DATA 7,6,4,0,6,7,5,5,0,7
1400 DATA 6,6,7,5,7,2,5,7,4,0
1410 DATA 2,3,4,2,0,4,0,6,5,2
:REM EARTH
1420 DATA 0,2,4,3,0,4,0,0,2,3
1430 DATA 6,2,4,2,0,4,0,4,2,7
1440 DATA 2,4,4,3,4,0,4,7,0,2
1450 DATA 5,1,1,4,0,1,0,5,0,6
:REM MARS
1460 DATA 3,1,1,2,0,1,0,0,1,2
1470 DATA 5,1,0,4,0,0,0,1,5,7
1480 DATA 1,0,1,2,0,0,0,5,0,4
1490 DATA 7,6,2,4,0,0,0,7,7,6
:REM ICE
1500 DATA 7,7,1,4,0,0,0,7,7,2
:REM SNOW
1510 DATA 7,0,0,1,0,0,0,6,0,5
:REM DIRTY
1520 DATA 6,4,4,2,0,4,0,0,4,7
:REM H2O
1530 DATA 0,0,4,7,0,0,0,4,0,5
:REM Ni
1540 DATA 0,0,2,4,0,0,0,7,0,6
:REM AlO
1550 DATA 0,0,6,7,0,0,0,7,7,3
:REM SiO
1560 DATA 0,0,1,5,0,0,0,7,0,1
:REM FeO
1570 DATA 0,6,4,5,0,6,0,0,0,2
:REM NH3+
1580 DATA 0,4,6,5,0,0,0,7,0,5
:REM NH3
1590 DATA 0,0,1,4,0,5,0,0,0,1
:REM CH4+
1600 DATA 0,0,4,1,0,0,0,7,0,4
:REM CH4
1610 DATA 0,3,4,2,0,3,0,0,0,7
:REM H2S+
1620 DATA 0,0,3,7,0,0,0,3,0,2
:REM H2S
1630 DATA 0,0,0,0,0,0,0,7,0,7
:REM C
1640 DATA 0,0,7,0,0,0,0,6,0,4
:REM ROCK
1650 DATA 0,1,4,5,0,0,0,7,0,1
:REM PLUTO
1660 DATA 0,4,1,2,0,0,0,7,0,4
1670 DATA 0,4,4,2,0,2,0,0,6,3
1680 DATA 0,4,7,1,0,5,0,0,0,6
1690 REM line 930 must point
here
1700 DATA 7,3,5:REM JUPITER
1710 DATA 3,6,2
1720 DATA 2,6,5
1730 DATA 7,3,2
1740 DATA 3,1,5:REM SATURN
1750 DATA 3,4,5
1760 DATA 2,4,5
1770 DATA 5,4,1
1780 DATA 1,4,4:REM URANUS/NE
PTUNE
1790 DATA 5,4,4
1800 DATA 6,4,4
1810 DATA 6,4,5
1820 REM line 1180 must point
here
1830 DATA 0,5,8,0,0,7:REM DWE
LLINGS
1840 DATA 1,7,7,1,1,3
1850 DATA 0,6,15,0,2,5
1860 DATA 2,8,11,1,2,2
1870 DATA 4,15,4,1,2,7
1880 DATA 0,15,8,0,0,1
1890 DATA 2,10,4,10,5,4
1900 DATA 0,15,6,15,4,7
1910 DATA 3,6,15,0,3,1

```

Listing 3. Mazes

```

10 REM Listing 3: Maze Game
20 REM By Peter Voke
30 REM for BBC B use PAGE=&
1100
40 REM (c) Acorn User Janua
ry 1989
50 :
60 MODE 130:VDU 23;11;0;0;0
;
70 @%=3:FX 4 1
80 FX 9 0
90 V%=500:I%=8:J%=8:G%=0:S%
=0
100 DIM D$(8)
110 DIM M$(15,15)
120 D$(8)="N":D$(4)="E"
130 D$(2)="S":D$(1)="W"
140 PROC M:G%=9
160 REPEAT
170 FOR K%=1 TO 6
180 VDU 19,K%,1+(V%+K%) MOD
6;0;
190 NEXT
200 IF G%=81:PROC Q:GOTO 380
210 IF G%>127 OR G%>13 OR G%
=9 THEN 300
220 IF G%<49 OR G%>576 G%=49
230 FOR I%=49 TO G%
240 IF FNC(I%,J%,D%)=0:VDU 7
:TX=G%:GOTO 290
250 IF D%=1 I%=I%-1
260 IF D%=4 I%=I%+1
270 IF D%=2 J%=J%-1
280 IF D%=8 J%=J%+1
290 NEXT
300 IF G%=9 S%=S%+R%:Q%=&900
+I%*16+J%:QX=Q% OR &80
310 IF G%=137 DX=D%/2:IF DX=
0:DX=8
320 IF G%=136 DX=D%*2:IF DX=
16:DX=1
330 IF G%=13 DX=D%*4:IF DX>8
:DX=DX/16
340 IF G%<>138 THEN 360
350 IF FNC(I%,J%,16)=0:VDU 7
:ELSE V%=V%-1:PROC M:D%=4:G%=9:
VDU 4:UNTIL FALSE
360 IF G%<>139 THEN 380
370 IF FNC(I%,J%,32)=0:VDU 7
:ELSE V%=V%+1:PROC M:D%=4:G%=9:
VDU 4:UNTIL FALSE
380 CLS:W%=0
390 IF FNC(I%,J%,16):PROCT(1
)
400 IF FNC(I%,J%,32):PROCU(1
)
410 IF D%=1 PROC1
420 IF D%=2 PROC2
430 IF D%=4 PROC4
440 IF D%=8 PROC8
450 PRINT TAB(7,1)D$(D%),S%
460 GX=INKEY 0:IF GX<0 THEN
460
470 UNTIL FALSE
480 :
490 DEF PROC1
500 K%=I%+1:L%=J%
510 REPEAT:K%=K%-1
520 IF FNC(K%,L%,8)=0 PROCW(
1,I%-K%+1)ELSE IF FNC(K%,L%+1,
1) PROC(1,I%-K%+2,12)ELSE PRO
CD(1,I%-K%+2,14)
530 IF FNC(K%,L%,2)=0 PROCW(
-1,I%-K%+1)ELSE IF FNC(K%,L%-1
,1) PROC(-1,I%-K%+2,12)ELSE
PROCD(-1,I%-K%+2,14)
540 UNTIL FNC(K%,L%,1)=0
550 PROC(1,I%-K%+2):ENDPROC
560 :
570 DEF PROC4
580 K%=I%-1:L%=J%
590 REPEAT:K%=K%+1
600 IF FNC(K%,L%,2)=0 PROCW(
1,K%-I%+1)ELSE IF FNC(K%,L%-1
,4) PROC(1,K%-I%+2,12)ELSE P
ROCD(1,K%-I%+2,14)
610 IF FNC(K%,L%,8)=0 PROCW(
-1,K%-I%+1)ELSE IF FNC(K%,L%+1
,4) PROC(-1,K%-I%+2,12)ELSE
PROCD(-1,K%-I%+2,14)
620 UNTIL FNC(K%,L%,4)=0
630 PROC(K%-I%+2):ENDPROC
640 :
650 DEF PROC2
660 K%=I%:L%=J%+1
670 REPEAT:L%=L%+1
680 IF FNC(K%,L%,1)=0 PROCW(
1,J%-L%+1)ELSE IF FNC(K%-1,L%
,2) PROC(1,J%-L%+2,12)ELSE P
ROCD(1,J%-L%+2,14)
690 IF FNC(K%,L%,4)=0 PROCW(
-1,J%-L%+1)ELSE IF FNC(K%+1,L
%,2) PROC(-1,J%-L%+2,12)ELSE
PROCD(-1,J%-L%+2,14)
700 UNTIL FNC(K%,L%,2)=0
710 PROC(J%-L%+2):ENDPROC
720 :
730 DEF PROC8
740 K%=I%:L%=J%-1
750 REPEAT:L%=L%-1
760 IF FNC(K%,L%,4)=0 PROCW(
1,L%-J%+1)ELSE IF FNC(K%+1,L%
,8) PROC(1,L%-J%+2,12)ELSE P
ROCD(1,L%-J%+2,14)
770 IF FNC(K%,L%,1)=0 PROCW(
-1,L%-J%+1)ELSE IF FNC(K%-1,L
%,8) PROC(-1,L%-J%+2,12)ELSE
PROCD(-1,L%-J%+2,14)
780 UNTIL FNC(K%,L%,8)=0
790 PROC(L%-J%+2)
800 ENDPROC
810
820 DEF FNC(X%,Y%,D%)
830 QX=&900+X%*16+Y%
840 =(QX) AND D%
850 :
860 REM VERTICAL
870 DEF PROCV(S%,Z%,TX)
880 H%=512/Z%
890 P%=640+S%*614/Z%
900 PLOT TX,P%,508-H%
910 PLOT TX,P%,508+H%
920 ENDPROC
930 :
940 REM HORIZONTAL

```

Continued ►

YELLOW PAGES

GRAPHICS

Listing 3. Maze continued

```

950 DEF PROCH(SX,ZX)
960 HX=512/ZX
970 BX=614.4/ZX
980 MOVE 640-BX,508+HX*5X
990 DRAW 640+BX,508+HX*5X
1000 ENDPROC
1010 :
1020 REM PERP'R
1030 DEF PROCP(SX,TX,AX,ZX)
1040 MOVE 640+614/AX*TX,508+5
12/AX*5X
1050 DRAW 640+614/ZX*TX,508+5
12/ZX*5X
1060 ENDPROC
1070 :
1080 REM SIDEWALL
1090 DEF PROCW(SX,ZX)
1100 IF (DX AND 5) GCOL 0,1+J
% MOD 7 ELSE GCOL 0,1+IX MOD 7
1110 PROCV(SX,ZX,4)
1120 PROCV(SX,ZX+1,85)
1130 WX=WX+1
1140 ENDPROC
1150 :
1160 REM ENDWALL
1170 DEF PROCE(ZX)
1180 IF FNC(KX,LX,16) PROCT(Z
%-1)
1190 IF FNC(KX,LX,32) PROCU(Z
%-1)
1200 IF (DX AND 5) GCOL 0,1+K
% MOD 7 ELSE GCOL 0,1+LX MOD 7
1210 PROCV(1,ZX,4)
1220 PROCV(-1,ZX,85)
1230 IF ZX<2 OR WX<2 OR FNC(
IX,JX,80)<>0 OR FNC(IX,JX,16)
<>0:RX=0:ENDPROC
1240 U=RND(-VX*37-IX*43-JX*19
)
1250 VDU 5:MOVE 560,180:GCOL
0,7
1260 RX=RND(7)
1270 ON RX GOSUB 1290,1300,13
10,1320,1330,1340,1350
1280 ENDPROC
1290 PROCobj("ooo"):PRINT TAB
(7,3)"chain":RETURN
1300 PROCobj("B B"):PRINT TAB
(7,3)"coins":RETURN
1310 PROCobj("+--"):PRINT TAB
(7,3)"dagger":RETURN
1320 PROCobj(":"):PRINT TAB
(7,3)"jewels":RETURN
1330 PROCobj("~ ~"):PRINT TAB
(7,3)"pearls":RETURN
1340 PROCobj("% %"):PRINT TAB
(7,3)"crown":RETURN
1350 PROCobj("* *"):PRINT TAB
(7,3)"gold":RETURN
1360 DEF PROCobj(A#)
1370 PRINT A#:PLOT 0,-160,-4
:PRINT A#
1380 VDU 4:ENDPROC
1390 :
1400 REM DOOR
1410 DEF PROCD(SX,ZX,FX)
1420 IF ZX<2:ENDPROC
1430 IF (DX AND 5) GCOL 0,1+K
% MOD 7 ELSE GCOL 0,1+LX MOD 7
1440 IF FX<14 FX=10
1450 HX=512/ZX
1460 AX=640+HX*5X*1.2
1470 BX=640+512/(ZX-FX/16)*5X
*1.2
1480 MOVE AX,508-HX
1490 MOVE BX,508-HX
1500 PLOT 85,AX,508+HX
1510 PLOT 85,BX,508+HX
1520 ENDPROC
1530 :
1540 REM DOWN
1550 DEF PROCT(ZX)
1560 PROCH(-1,ZX)
1570 PROCH(-1,ZX+1)
1580 MOVE 640-614/ZX,508-512/
ZX
1590 DRAW 640-614/(ZX+1),508-
512/(ZX+1)
1600 DRAW 640-614/(ZX+1),508-
512/ZX
1610 MOVE 640+614/ZX,508-512/
ZX
1620 DRAW 640+614/(ZX+1),508-
512/(ZX+1)
1630 DRAW 640+614/(ZX+1),508-
512/ZX
1640 ENDPROC
1650 :
1660 REM UP
1670 DEF PROCU(ZX)
1680 PROCH(1,ZX):PROCH(1,ZX+1
)
1690 MOVE 640-614/ZX,508+512/
ZX
1700 DRAW 640-614/(ZX+1),508+
512/(ZX+1)
1710 DRAW 640-614/(ZX+1),508+
512/ZX
1720 MOVE 640+614/ZX,508+512/
ZX
1730 DRAW 640+614/(ZX+1),508+
512/(ZX+1)
1740 DRAW 640+614/(ZX+1),508+
512/ZX
1750 ENDPROC
1760 :
1770 DEF PROCG
1780 CLS:GCOL 0,7
1790 PRINT TAB(4,1)"LEVEL "VX
1800 FOR XX=0 TO 15
1810 FOR YX=0 TO 15
1820 IF FNC(XX,YX,2)=0 MOVE 2
56+XX*48,128+YX*48:DRAW 256+XX
*48+48,128+YX*48
1830 IF FNC(XX,YX,1)=0 MOVE 2
56+XX*48,128+YX*48:DRAW 256+XX
*48,128+YX*48+48
1840 NEXT:YX
1850 MOVE 256,896:DRAW 1024,8
96:DRAW 1024,128
1860 PROCwhere
1870 ENDPROC
1880 :
1890 DEF PROCM
1900 FOR AX=0 TO 15
1910 FOR BX=0 TO 15
1920 MX(AX,BX)=0
1930 NEXT:NEXT
1940 CLS:GCOL 0,7:AX=RND(-VX*
53)
1950 PRINT TAB(4,1)"LEVEL "VX
1960 FOR XX=0 TO 768 STEP 48
1970 MOVE 256+XX,128
1980 DRAW 256+XX,896
1990 NEXT
2000 FOR YX=0 TO 768 STEP 48
2010 MOVE 256,128+YX
2020 DRAW 1024,128+YX
2030 NEXT
2040 NX=0
2050 GCOL 0,0
2060 AX=RND(14)
2070 BX=RND(14)
2080 FX=RND(6)*5
2090 DX=(RND(2)*2-3)
2100 EX=(RND(2)*2-3)
2110 REPEAT
2120 CX=0
2130 IF RND(FX)=1 AND NX THEN
2140 PROCN(DX,0)
2150 PROCN(0,EX)
2160 PROCN(-DX,0)
2170 PROCN(0,-EX)
2180 IF CX=0 PROCs:GOTO 2130
2190 AX=KX:BX=LX
2200 UNTIL NX>254
2210 GCOL 0,3
2220 QX=0
2230 FOR AX=0 TO 15
2240 FOR BX=0 TO 15
2250 QX?&900=MX(AX,BX)
2260 QX=QX+1
2270 NEXT:NEXT
2280 VDU 5
2290 IF VX MOD 2:??&900=?&900
OR 16:??&90F=?&90F OR 32:ENDPR
OC
2300 ??&90F=?&90F OR 16
2310 ??&900=?&900 OR 32
2320 PROCwhere
2330 ENDPROC
2340 :
2350 DEF PROCwhere:VDU 5
2360 MOVE 250+IX*48,168+JX*48
2370 IF DX=1 PRINT "<"
2380 IF DX=2 PRINT "<"
2390 IF DX=4 PRINT ">"
2400 IF DX=8 PRINT ">"
2410 MOVE 264,168
2420 IF VX MOD 2 PRINT "d" EL
SE PRINT "u"
2430 MOVE 264,888
2440 IF VX MOD 2 PRINT "u" EL
SE PRINT "d"
2450 *FX 15
2460 U=GET:VDU 4:ENDPROC
2470 :
2480 DEF PROCN(GX,HX)
2490 IF CX ENDPROC
2500 KX=AX+GX:LX=BX+HX
2510 IF KX<0 OR KX>15 OR LX<0
OR LX>15 ENDPROC
2520 IF MX(KX,LX) ENDPROC
2530 NX=NX+1
2540 CX=TRUE
2550 IF KX<AX PROCG(0,4,0,47)
:MX(AX,BX)=MX(AX,BX) OR 1:MX(K
%,LX)=MX(KX,LX) OR 4:ENDPROC
2560 IF KX>AX PROCG(48,4,48,4
7):MX(AX,BX)=MX(AX,BX) OR 4:MX
(KX,LX)=MX(KX,LX) OR 1:ENDPROC
2570 IF LX<BX PROCG(8,0,47,0)
:MX(AX,BX)=MX(AX,BX) OR 2:MX(K
%,LX)=MX(KX,LX) OR 8:ENDPROC
2580 IF LX>BX PROCG(8,48,47,4
8):MX(AX,BX)=MX(AX,BX) OR 8:MX
(KX,LX)=MX(KX,LX) OR 2
2590 ENDPROC
2600 :
2610 DEF PROCs
2620 REPEAT
2630 AX=RND(16)-1:BX=RND(16)-
1
2640 UNTIL MX(AX,BX)<>0
2650 ENDPROC
2660 :
2670 DEF PROCG(PX,QX,RX,SX)
2680 XX=256+AX*48:YX=128+BX*4
8
2690 MOVE XX+PX,YX+QX:DRAW XX
+RX,YX+SX
2700 ENDPROC

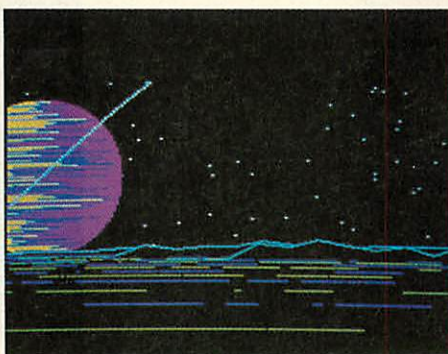
```

OFFERS

THIS MONTH'S LISTINGS

We have put together many utilities to help get your 1989 computing off to a good start. Included in Hints and Tips this month are: a fade to black routine which protects the monitor automatically while the keyboard is not being used; a one-line function procedure lister; a utility to provide a word wrap on *Interword*; and a file back-up for *Wordwise Plus*.

Agora features programs that explain the sound system on the Arc including



converting samples into modules. There is also a disc sector copier and a Master to Arc font converter.

Joe Telford has come up with a *User Card* to rival Apple's *Hypercard*. There are also all sorts of digitised pictures. The monthly discs are available in 3.5-inch and 5.25-inch versions, please see page 115 to place your order.

See in 1989 with the January's listing disc

GAMES DISC

Ten of the best *Acorn User* games on one 80-track double-sided 5.25-inch disc.

Whether you're into arcade or adventure type games this new disc has something for everyone. The games included are *Warlord*, *Wizalon*, *Castle of Nightmares*, *Run Silent*, *Run Deep*, *Polyominoes* and *Quadline*. We have also included three of the most popular one-line games from recent *Abusers*. Test your knowledge with *Mastermind* and start

playing *Varpon* and *Lurch* to win. Make sure you get your disc of fun and entertainment and send off for the Games disc today. At only £8.95 it will make the perfect Christmas gift.

Games galore for just £8.95

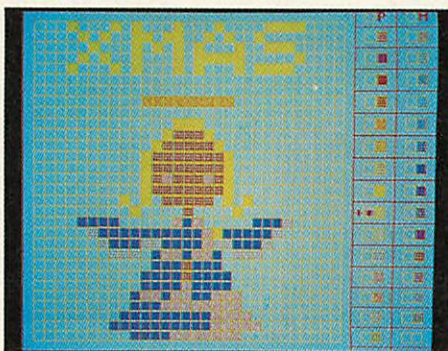


'87 COMPILATION DISC

Acorn User has put all your favourite programs, routines and utilities from 1987 on one disc.

Featured are: Kiddie Art; Tapestry; PCB by CAD; Autumn and Theme, our music programs from April '87. Also on the disc is Joe Telford's GEM-like front end for the Master including a desktop calendar and year planner.

Other useful utilities include a proportional screen dump, a *View printer*



driver generator, a monitor-testing routine and a routine for printing spreadsheets sideways.

The second half of the disc is devoted to graphics, with a video image enhancer and six of the best Graphics Bonuses.

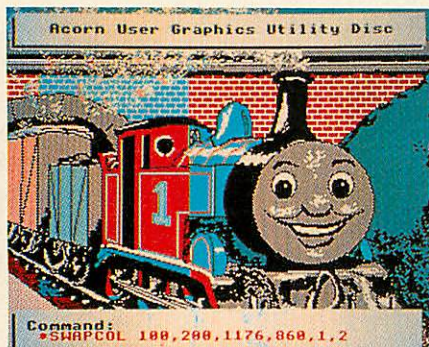
The *Acorn User '87* Compilation disc comes in 5.25-inch 80-track format, with a comprehensive manual which includes all function key strips and instructions needed for the programs.

All the very best of '87 on one disc

ORDER BY TELEPHONE (0672) 40825

OFFERS

SOFTWARE & GRAPHICS



Great graphics utilities

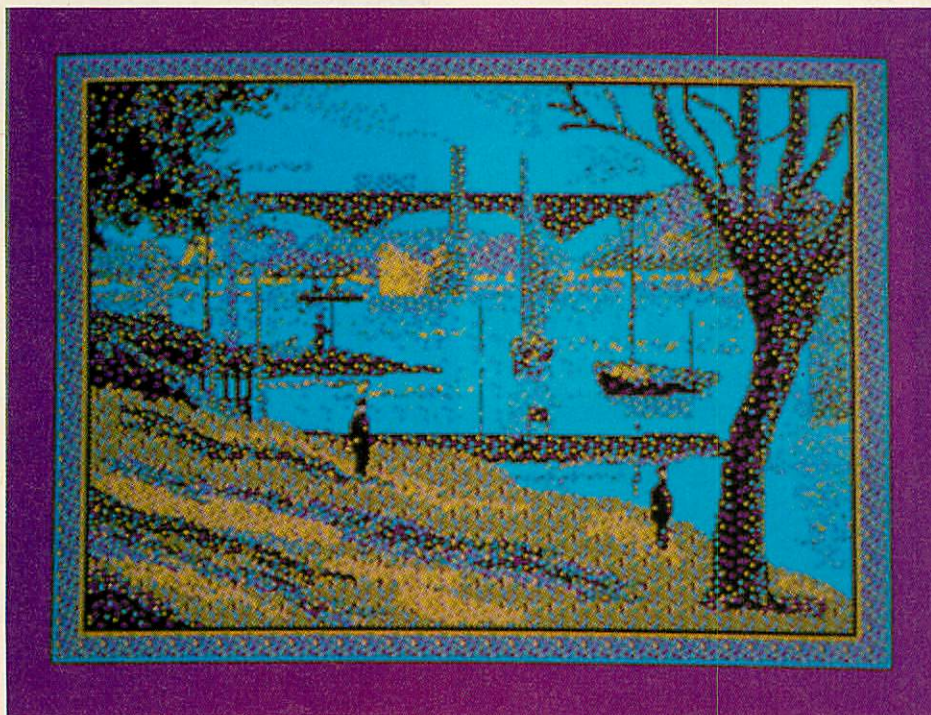
The 40-track 5.25-inch *Graphics Utilities* disc, keenly priced at £7.95, features 16 stand-alone machine code utilities, an advanced teletext editor, several useful Basic procedures, an easy-to-adapt disc header and index. Included are: *ROTATE, rotates area through 180 degrees; *SWAPCOL, swaps two colours; *COLFILL, a colour fill routine; *SVPIC, saves a compacted picture; *LDPIC, reloads a compacted picture. There are many utilities to manipulate graphics.



Sideways RAM made simple

The *Acorn User* sideways RAM disc gives you many more utilities for your sideways RAM. These include: RAMpad – your computer's answer to the pad and pen; six different on-screen fonts available in all modes; a 15k printer buffer; Screen Swap – store and recall mode 4 or 5 screens; *ROMHEAD – standard service ROM header; *RLOOK – allows you to examine sideways RAM or ROM.

There are many more utilities on this 40/80-track 5.25-inch disc and it's a snip at £9.95.



Micro masterpieces on Portfolio for £9.95

Jonathan Inglis, freelance illustrator, has assembled a *Portfolio* of his best work exclusively for *Acorn User*.

The disc contains screens that have been used by national and regional publications. Included are Seurat's *Bathers*, a *Time Out* cover from August 1985, and two familiar *Acorn User* covers, *Willow* (Nov '86) and *Magician* (Jan '86), as well as several pictures commissioned by *The Times*.

Three of Jonathan's favourite masterpieces are on the disc; Seurat's *Riverside*, Vermeer's *Lady at the Virginal* and a copy of a famous lithograph by Matisse. Sade fans will probably be more interested in the two stunning portraits of the singer included on the disc.

You can create your own *pièce de résistance* using the Pixel Editor and Super Painter programs. Pixel Editor allows you to draw in and alter minute detail, while Super Painter enables you to draw lines, texture your screen and shade by mixing the eight standard colours.

Portfolio comes in 80-track 5.25-inch format with a comprehensive instruction sheet telling you about the pictures and how the artist created them. This disc can be yours for only £9.95.

TO ORDER USE THE FORM ON PAGE 116

ORDER FORM

5.25-INCH DISC SUBSCRIPTIONS

Yes! Please start my 5.25-inch disc subscription with the _____ issue.

- | | | |
|--------------------------------------|--------------------------|--------|
| 01 UK | <input type="checkbox"/> | £40.00 |
| 02 UK (with BBC Acorn User magazine) | <input type="checkbox"/> | £50.00 |
| 03 EUROPE (Airmail) | <input type="checkbox"/> | £76.00 |
| 03 OVERSEAS (Surface) | <input type="checkbox"/> | £76.00 |
| 04 OVERSEAS (Airmail) | <input type="checkbox"/> | £84.00 |

TOTAL VALUE £ _____

5.25-INCH MONTHLY DISCS

- | | | | | |
|-------------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|-------------------------------------|
| 1987 | <input type="checkbox"/> FEB 0217-8 | 1988 | <input type="checkbox"/> JAN 0228-3 | <input type="checkbox"/> JUL 0234-8 |
| <input type="checkbox"/> MAR 0218-6 | <input type="checkbox"/> FEB 0229-1 | <input type="checkbox"/> AUG 0235-6 | | |
| <input type="checkbox"/> APR 0219-4 | <input type="checkbox"/> MAR 0230-5 | <input type="checkbox"/> SEPT 0236-4 | | |
| <input type="checkbox"/> MAY 0220-8 | <input type="checkbox"/> APR 0231-3 | <input type="checkbox"/> OCT 0237-2 | | |
| <input type="checkbox"/> JUL 0222-4 | <input type="checkbox"/> MAY 0232-1 | <input type="checkbox"/> NOV 0238-0 | | |
| <input type="checkbox"/> SEP 0224-0 | <input type="checkbox"/> JUN 0233-X | <input type="checkbox"/> DEC 0239-9 | | |
| <input type="checkbox"/> NOV 0226-7 | | 1989 | <input type="checkbox"/> JAN 0240-2 | |
| <input type="checkbox"/> DEC 0227-5 | | | | |

TOTAL VALUE £ _____

3.5-INCH DISC SUBSCRIPTIONS

Yes! Please start my 3.5-inch disc subscription with the _____ issue.

- | | | |
|-----------------------|--------------------------|--------|
| 01 UK | <input type="checkbox"/> | £55.00 |
| 02 EUROPE (Airmail) | <input type="checkbox"/> | £76.00 |
| 02 OVERSEAS (Surface) | <input type="checkbox"/> | £76.00 |
| 03 OVERSEAS (Airmail) | <input type="checkbox"/> | £84.00 |

TOTAL VALUE £ _____

3.5-INCH MONTHLY DISCS

- | | | | |
|---|--|------|---|
| 1988 | <input type="checkbox"/> AUGUST 0501-0 | 1989 | <input type="checkbox"/> JANUARY 0506-1 |
| <input type="checkbox"/> SEPTEMBER 0502-9 | | | |
| <input type="checkbox"/> OCTOBER 0503-7 | | | |
| <input type="checkbox"/> NOVEMBER 0504-5 | | | |
| <input type="checkbox"/> DECEMBER 0505-3 | | | |

Monthly 3.5-inch discs are suitable for the Master Compact and the Archimedes.

UK = £6.95
Europe = £7.95
Overseas = £8.95

TOTAL VALUE £ _____

MAGAZINE SUBSCRIPTIONS

Yes! Please start my subscription with the _____ issue.
(UK subscribers should see page 76.)

- | | 12 issues | 27 issues |
|----------------------------|-----------|-----------|
| 01 UK | £18.95 | £35.00 |
| 02 UK WITH 5.25-inch DISC | £55.00 | |
| 03 EUROPE | £28.00 | £50.00 |
| 04 MIDDLE EAST | £35.00 | £60.00 |
| 05 THE AMERICAS AND AFRICA | £40.00 | £70.00 |
| 06 REST OF THE WORLD | £45.00 | £80.00 |

TOTAL VALUE £ _____

MAGAZINE BACK ISSUES

- | | | | | | |
|-------------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|------|-------------------------------------|
| 1986 | <input type="checkbox"/> JAN 0032-9 | 1987 | <input type="checkbox"/> JAN 0044-2 | 1988 | <input type="checkbox"/> JAN 0056-6 |
| <input type="checkbox"/> FEB 0033-7 | <input type="checkbox"/> MAR 0046-9 | <input type="checkbox"/> FEB 0057-4 | | | |
| <input type="checkbox"/> MAR 0034-5 | <input type="checkbox"/> APR 0047-7 | <input type="checkbox"/> MAR 0058-2 | | | |
| <input type="checkbox"/> APR 0035-3 | <input type="checkbox"/> MAY 0048-5 | <input type="checkbox"/> APR 0059-0 | | | |
| <input type="checkbox"/> MAY 0036-1 | <input type="checkbox"/> JUN 0049-3 | <input type="checkbox"/> JUN 0061-2 | | | |
| <input type="checkbox"/> JUN 0037-X | <input type="checkbox"/> JUL 0050-7 | <input type="checkbox"/> JUL 0062-0 | | | |
| <input type="checkbox"/> JUL 0038-8 | <input type="checkbox"/> AUG 0051-5 | <input type="checkbox"/> AUG 0063-9 | | | |
| <input type="checkbox"/> AUG 0039-6 | <input type="checkbox"/> SEP 0052-3 | <input type="checkbox"/> SEPT 0064-7 | | | |
| <input type="checkbox"/> SEP 0040-X | <input type="checkbox"/> OCT 0053-1 | <input type="checkbox"/> OCT 0065-5 | | | |
| <input type="checkbox"/> OCT 0041-8 | <input type="checkbox"/> NOV 0054-X | <input type="checkbox"/> NOV 0066-3 | | | |
| | <input type="checkbox"/> DEC 0055-8 | <input type="checkbox"/> DEC 0067-1 | | | |

TOTAL VALUE £ _____

UK = £1.95
Europe = £2.95
Overseas = £3.95

BINDERS

TOTAL VALUE £ _____

☐ MAGAZINE BINDER 1201-7

UK = £4.95
Europe = £7.95
Overseas = £14.95

24-HOUR TELEPHONE SERVICE (0672) 40825

ORDER FORM

ACORN USER ROMS

| | | |
|------------------------------------|--------|-------------------|
| <input type="checkbox"/> USER DUMP | 1001-4 | UK = £19.95 |
| <input type="checkbox"/> USER ROM | 1002-2 | Europe = £20.95 |
| <input type="checkbox"/> AXR ROM | 1003-0 | Overseas = £21.95 |

TOTAL VALUE £_____

ACORN USER SPECIAL CASSETTES

| | | |
|--|--------|------------------|
| <input type="checkbox"/> ACORN USER GRAPHICS | 0601-7 | UK = £2.95 |
| <input type="checkbox"/> BEST OF ACORN USER | 0602-5 | Europe = £4.95 |
| <input type="checkbox"/> FINEST FAVOURITES | 0604-1 | Overseas = £5.95 |

TOTAL VALUE £_____

ACORN USER SPECIAL DISCS

GRAPHICS UTILITIES DISC
40-track 0830-3 ☐

UK = £7.95
Europe = £8.95
Overseas = £9.95

EDUCATION DISC
40-track 0815-X ☐

VIEWCHART DISC
40-track 0920-2 ☐

UK = £12.95
Europe = £13.95
Overseas = £14.95

1987 COMPILATION DISC
80-track 0990-3 □

UK = £6.95
Europe = £7.95
Overseas = £8.95

TOTAL VALUE £ _____

SIDEWAYS RAM
UTILITIES DISC
40-track 0825-7 ☐ UK = £9.95
Europe = £10.95
Overseas = £11.95

CALLIGRAPHY
40/80-track 0950-4 ☐

PORTFOLIO DISC
80-track 0970-9 ☐

NETWORK UTILITIES
 DISC
 80-track 0809-5 ☐

UK = £19.95
 Europe = £20.95
 Overseas = £21.95

GAMES DISC □
80-track, double sided 0610-6
UK = £8.95
Europe = £9.95
Overseas = £10.95

☐ I enclose a cheque/postal order for a total of £ _____ made payable to Redwood Publishing Ltd

☐ Please debit my ☐ Visa (Barclaycard) ☐ Access (Mastercard)

Credit card number

| | | | |
|--|--|--|--|
| | | | |
|--|--|--|--|

| | | | |
|--|--|--|--|
| | | | |
|--|--|--|--|

| | | | |
|--|--|--|--|
| | | | |
|--|--|--|--|

| | | | |
|--|--|--|--|
| | | | |
|--|--|--|--|

 Expiry date

| | | | |
|--|--|--|--|
| | | | |
|--|--|--|--|

SIGNED _____ DATE _____

| MR/MRS/MISS/MS | INITIALS | SURNAME |
|----------------|----------|---------|
|----------------|----------|---------|

ADDRESS _____

POSTCODE TELEPHONE

Please return your order to: Redwood Publishing Ltd, Acorn User Mail Order, Marlborough Rd, Aldbourne, Wilts SN8 2DD.

For Office Use Only

[illegible]

24-HOUR TELEPHONE SERVICE (0672) 40825

Dabhand Guides for the BBC

HyperDriver: Printer Prowess

Rave reviews have praised the simplicity and ease of use of HyperDriver. This ROM will transform the way in which you use your printer.

From BASIC simple star commands allow you to access the entire range of your printers special effects. These same * commands can be embedded within products such as Inter-Word and WordWise Plus. A printer driver is included for View and View Professional users.

The special text print facility allows text to be previewed on-screen before printing. The NLQ font gives high quality printed output and a macro facility allows you to create your own * commands. All this and much, much more.

HyperDriver costs £29.95 for ROM, disc and 100-page manual, or £24.95 for an SRAM version. (SRAM and ROM versions are identical in operation.)

VIEW: A Dabhand Guide

This top selling guide to the VIEW wordprocessor has been highly acclaimed by all the BBC magazines. In comparison with Mastering View, ViewSheet and ViewStore Beebug said: "...much more to offer the competent VIEW user...practical and

MiniDriver: Printer Power for Mini Office II

MiniDriver is a must for all users of Mini Office II, providing real printer power from within any module and a ViewData terminal in one!

Simple mnemonic commands which may be embedded in your wordprocessor text allow you to gain full and simple access to all of your printers special effects. Not only that but the special preview option allows you to see on-screen the appearance of your text before printing thereby saving you time and paper.

A proportional NLQ font ensures all users of Mini Office have letter quality print output. An integral ViewData terminal allows access to electronic mail areas such as Prestel, and Micronet

MiniDriver works with all versions of Mini Office II and is supplied on ROM with a 40 page manual and disc. Price just £24.95 or £19.95 for SRAM version.

down-to-earth...for those who want a complete, thorough and readable guide to VIEW then Bruce Smith is your man. Even BBC Radio said: "It's very good". 254 pages and includes coverage of ViewSpell. Utility programs. Book: £14.95 or £17.95 with programs disc.

Master Operating System

David Atherton's book is quite simply – the Master Owner's Bible. This "invaluable" (A&B) guide to the inner workings of the Master 128, Compact and B+ contains a wealth of vital information on the MOS, Tube, filing system, * commands and much, much more. Beebug said in comparison with the New Advanced User Guide and the WE Ref. Guide: "...certainly has more detail on the MOS as one would expect." Price: £14.95 or £17.95 with programs disc.

MOS Plus

Master 128 owners, MOS Plus is an invaluable extension to your micro OS providing a wide range of facilities. For example, it supplies ADFS *FORMAT, *EXALL, *VERIFY, *BACKUP, and *CATALL in ROM. There are many new commands – *FIND locates a file anywhere on disc. New *CONFIGURE options allow you to configure startup colours. The Masters alarm feature is fully supported.

Beebug said: "MOS Plus is an excellent product". We agree! £12.95 (ROM)/£7.95 SRAM.

**Free catalogue.
Phone or write
today!**

**DABS
PRESS**

5 Victoria Lane (AUJ), Whitefield, Manchester M25 6AL

Tel: 061-766 8423 BT Gold: 72:MAG11596 Prestel: 942876210

Prices include VAT and P&P (UK/BFPO/CI). ACCESS/VISA accepted by post/phone/Mailbox/in person. Cheques and POs to address above. Dabs Press products available from all good dealers. Add £2.50 (£12 air) if outside UK. Official orders welcome.

contex

Archimedes is a trademark of Acorn Computers Ltd.

BANK MANAGER for disc systems only

The most advanced and versatile personal bank account management program available for all BBC computers. Consistently acclaimed!

"data entry is a delight... professional... excellent product" - Micro User April '86
Enter cheques and receipts. Standing orders any frequency. Automatic date sequencing. Reconcile statements. Search, amend and delete. Unreconcile. Move forwards or backwards. Analyse expenditure. Forward cash flow forecast. Up to 36 simultaneous 'bank accounts' online, inter-account transfers. 9999 standing orders. 99 analysis categories. 12 actual and 12 budgets per category, over 4,000 postings on an 80k disc. Reports to screen or printer. Graphics. Foreign currency support. Password. File recovery. Auto exec file. Field editing. Itemised look ahead. Programmable report writer.

Standard Bank Manager for the BBC B, B+ £17.50

BANK MANAGER MASTER for disc systems only

Version 2 now available. Includes all of the facilities of the Standard Bank Manager plus ADFS file system support, shadow screens, uses sideways RAM, 40 or 80 column screen reports, improved graphics, m/c windows, function key support and onscreen labels, additional functions added to the already extensive report facilities.

Bank Manager Master for the MASTER and MASTER COMPACT £22.50

ARCHIMEDES BANK MANAGER

All facilities of Master version plus high speed 'native' mode, wild card analysis enquiry, analysis code sort and other enhancements.

"Impressed, ideal, easy to use" - Micro User, March '88

ARCHIMEDES BANK MANAGER £25.00

BANK MANAGER BUSINESS UTILITIES for disc systems only

For the 'professional' who also uses the BANK MANAGER to control the business accounts the BUSINESS UTILITIES add double entry trial balance and programmable spreadsheet analysis reports. Generated from cheque and cash transactions keyed into BANK MANAGER. Just pass the reports to your accountant! Available for all Bank Manager versions, state which.

Bank Manager Business Utility Pack 1 £12.00

TYPING TUTOR

Quickly learn to touch type. Over 90 smoothly graded lessons graduate you from the basic home keys to complete keyboard mastery. Unique word scan line checking. Target WPM and percentage correct. You may revise the targets or lessons as required. Audio key click for positive key depression. Establish a typing rhythm using the automatic metronome. Free format option. Disc version includes several enhancements eg. on screen keyboard, exact mode, on screen parameters. Recommended.

Cassette £12.50, Disc for BBC B, B+, MASTER and COMPACT £12.50

Disc for ARCHIMEDES (all models) £15.00

ALL PRICES FULLY INCLUSIVE. FREE POSTAGE WITHIN UK.
Enquiries and Access Credit card orders telephone 023 03 347

Please state: cassette, 3 1/2" disc, 5 1/4" 40k disc, or 5 1/4" 80k disc and computer type (B, Compact, Master or Archimedes).

CONTEX COMPUTING

(REF. AU)

15 WOODLANDS CLOSE, COPE, BEDFORD MK44 3UE

SOLID STATE PARALLEL

PRINTSHARER/PRINTERCHANGER/PRINTERCROSSOVER

OUR SOLID STATE DATA SWITCHES CAN USE CABLES AS LONG AS 30M ON INPUT AND OUTPUT WITHOUT ANY DATA LOSS/ERROR

SPECIAL OFFER FOR BBC USERS

FREE INPUT CABLES

PRINTERSHARER

(SEVERAL MICROS TO 1 PRINTER)

3 WAY - 26 PIN - £60 (a) (3 x 6FT INPUT CABLES FREE)

6 WAY - 26 PIN - £110 (b) (6 x 6FT INPUT CABLES FREE)

PRINTERCHANGER

(1 MICRO TO SEVERAL PRINTERS)

3 WAY - 36 PIN - £60 (a) (1 x 6FT INPUT CABLE FREE)

6 WAY - 26 PIN - £110 (b) (1 x 6FT INPUT CABLE FREE)

PRINTERCROSSOVER

(2 MICROS TO 2 PRINTERS)

26 PIN - £70 (2 x 6FT INPUT CABLES FREE)

FOR IBM & COMPATIBLES

PRINTSHARPER/PRINTERCHANGER

WITHOUT INPUT CABLES

2 WAY £70 (a)

3 WAY £80 (a)

6 WAY £140 (c)

WITH INPUT CABLES

2 WAY £90 (b)

3 WAY £110 (b)

6 WAY £200 (c)

FOR SERIAL & PARALLEL SMART & BUFFERED SWITCHES

& INLINE BUFFERS, PLEASE CONTACT

CUSTOM CABLE-MAKING SERVICE AVAILABLE



Add Postage: (a) £4.00 (b) £6.00 (c) £7.50 + 15% V.A.T

KEYZONE COMPUTER PRODUCTS LTD

454 Sunleigh Road

Alperton, Wembley

Middlesex HA0 4NW

Telephone: 01-900 1525 Telex: 881 3271 GECOMS G

Succeed with LCL Self-Tuition Courses



THE BEST Highest ever marks in recent review.
Hons. graduate/teacher authors.
World leader (24 countries)

FOR YOU for beginners (from ages 4 to adult), exam candidates

or teachers with any BBC Micro (B, B+, Master, Compact, Electron or ARCHIMEDES **new**)

NOW immediate dispatch

£5 off total for 2 courses, £10 off for 3, £17 off for four, £24 off for five

SOFTWARE. Each course includes 24 programs on up to 105 topics held on 2-4 discs/tapes and usually with 2 books and a voice tape and costs only £24.

READING WRITING COURSE

Teaches using moving colour pictures and speech **NEW**

PRIMARY MATHS COURSE

All animated, colour graphics extra two disks available for £5 (4 discs)
With real speech & graphics adventure game
Best seller, highly acclaimed
Eng. Language or EFL with real speech (new enlarged)

MICRO FRENCH (8-GCSE)

MICRO MATHS (11-GCSE)

MICRO ENGLISH (8-GCSE)

MEGA MATHS

HOME COLLEGE

A-level course with all Calculus by graphics
Open learning courses of video, software and books.
Choice of MATHS, ENGLISH, or FRENCH. Only £49.99 each

SEND COUPON OR PHONE ORDERS OR REQUESTS FOR FREE COLOUR CATALOGUE AND POSTER TO:

LCL (Dept A) Thames House, 73 Blandy Road, Henley, Oxon RG9 1QB



OR RING (0491) 579345 (10am-10pm)



NAME _____ ADDRESS _____

TITLE _____ COMPUTER _____ Disc/Tape/3 1/2" disc

USE A PERSONAL ORGANISER?

YOU NEED THE

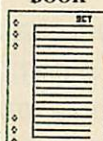
FAX*FILE ORGANISER

Combine the power of your BBC with the flexibility and convenience of a personal organiser (Filofax, Lefax etc) to create a personalised data base. Using special sized computer paper or single sheets to print:

- * Diaries including your data (on disc)
- * Address book pages, up to 48 entries sorted by name.
- * Custom designed forms.



ADDRESS BOOK



DIARY

"simple but effective product, very easy to use" Acorn User

"Extremely friendly. I cannot fault it" Beebug

"I have no reservations about recommending this product" Micro User

£12.95 INC P&P

DISC, 40/80 track (state which)
manual
sample pack of paper.

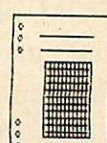
ARC Version
Phone for
details.

MEWsoft
11 Cressy Road
London NW3 2NB
(01-267 2642)

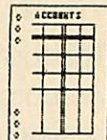
MEWsoft's latest product: THE A4 FORMS DESIGNER

'A cheap and effective program' Acorn User Sept, 88

Similar to the Forms Designer feature of the Fax*file Organiser but with block copy, scrolling A4 size page, data insertion, etc. Ideal for Schools, Clubs, and for invoices, membership forms etc. For Master/Compact, ARC, Model-B with Shadow RAM.
5 1/4" Disk £9.95 Arc Version £12.95 3 1/2" Disk.



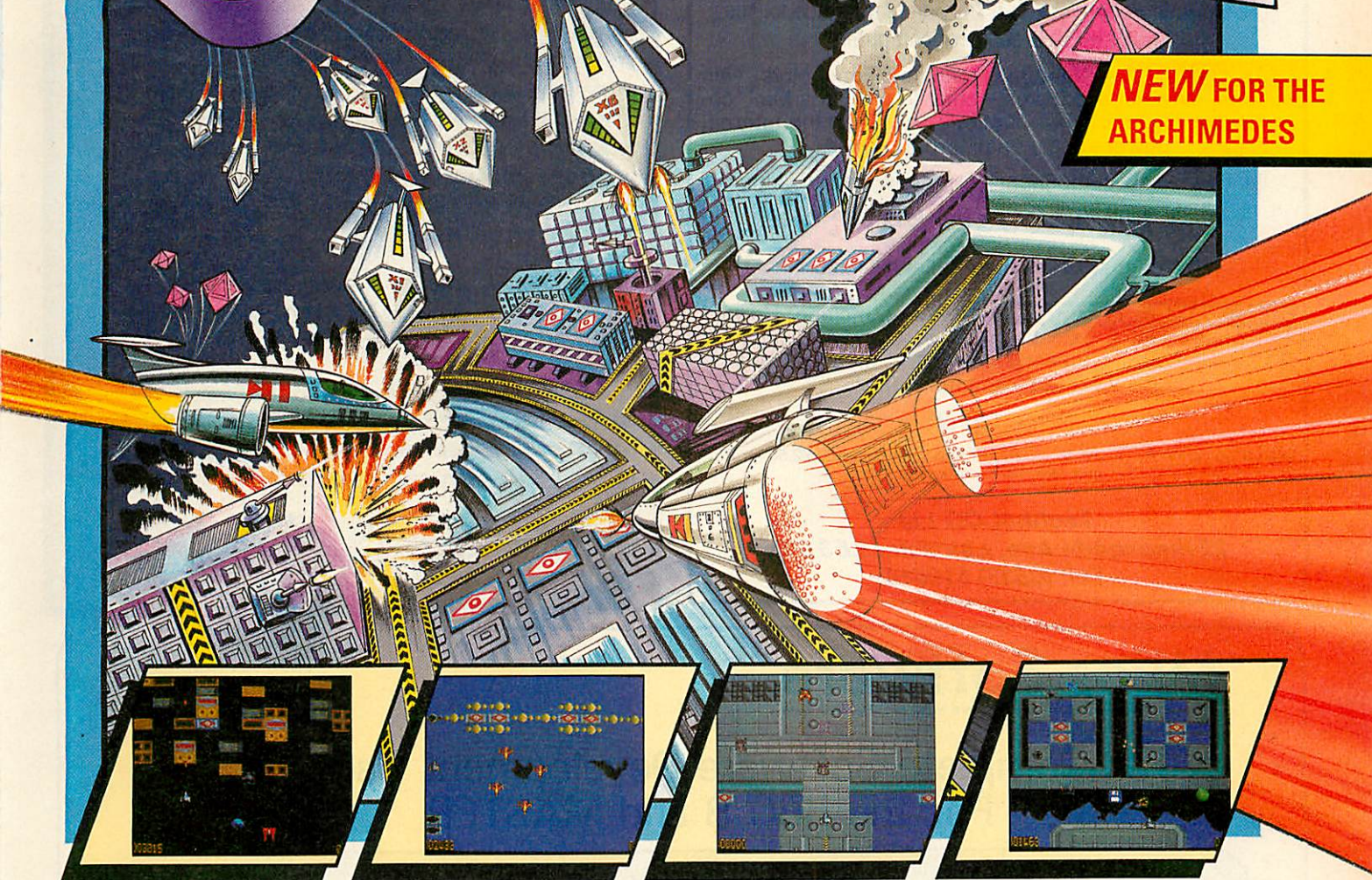
FORMS



ACCOUNTS

QUAZER

**NEW FOR THE
ARCHIMEDES**



QUAZER - The Experience Starts Now!

Fifteen million years ago there was peace in the galaxy until the Werros came from the distant galaxy of the Toosaheab.

Some arrived in their fast streamlined Geith ships, others in the less fast but more manoeuvrable Roufs. Some even flew the one-man Lucls ship. Propelled by powerful Roa engines they travelled through Rervi-hyperspace to the Milky Way for the battle that they called "The Tagerta": the battle that was to affect every single member of the galaxy.

They attacked, no-one was ready. Almost before the Milky Way's fleet could be alerted they had sent their enslavers - The Theedamas - to capture planets. The whole galaxy was taken over in a matter of months. It was the biggest catastrophe they had ever suffered.

Now it is time for the tables to be turned - rebel intelligence has located the base planet of the Werros and it is YOUR job to destroy it

You are in command of the specially commissioned Quazer spaceship in this super fast action Archimedes cult spectacular. It features the most amazing graphics ever seen with superb parellax scrolling and stunning sound effects.

Reflexes alone will not be enough to deal with the waves of co-ordinated alien fleets and their deadly attack formations. You must manoeuvre your ship through increasingly difficult terrains and use strategies of attack, defence and bluff to stay alive.

To complete any level you must destroy specific alien land bases and these increase in number as you progress. You can start at any level that you have completed using the password system or jump straight to your highest attained level.

Go at 'em!

HOW TO ORDER

Simply fill in the coupon and send with a cheque or postal order to Impact Software.

- All "Quazers" despatched by 1st Class Post on same day as order. (Unparalleled Service).

- Free postage and Packing.

IMPACT
Software

Impact Software
Neepsend House
1 Percy St.
Sheffield S3 8AU
Tel. (0742) 769950

To: Impact Software, Neepsend House, 1 Percy St.,
Sheffield, S3 8AU.

Please send me the following:

QUAZER

Archimedes 3 1/2" Disc ONLY £11.95

I enclose a cheque/PO (made payable to Impact Software)
for **£11.95.**

(N.B. If there are any other games you would also like to order at the same time please see the comprehensive Impact Games Club advert elsewhere in this magazine).

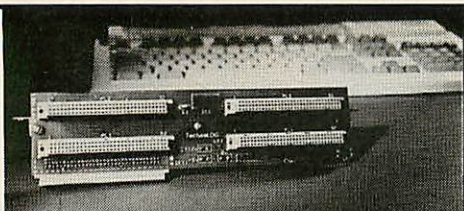
(BLOCK CAPITALS PLEASE)

Name

Address

Postcode

**SPECIAL
OFFER
1st DEC
TO 10th JAN**



TechnoLOG

The ultimate Back-Plane and Disc-drive Interface for the ARCHIMEDES series of computers

BACK-PLANE — features include: Four slots with optional external expansion—Ability to plug in a Math co-processor (400 series) — Options for use of the internal power supply on external boards

Quality PCB & components—complete with all fixings

Introductory offer £39.95

Norm. price £44.95

Optional single external slot £13.50

DISC-DRIVE INTERFACE — features include: Up to 3 ext. drives—switch 1st ext. drive to O or A (useful for PC's)—ext. Power connector—use 5 1/4" or 3 1/2" drives—fully buffered — and many more . . .

Price £29.95

Mail order only. All prices exc. VAT and P&P. Please add £2.50 for P&P and 15% VAT to the total.

TechnoLOG Ltd
22 Fineshade Ave, Leicester LE3 9TN
Tel: (0533) 510610

Technical Assistant

Based in St Albans, BEEBUG is a company which specialises in the publication of computer magazines and computer software for the BBC micro, Master and Archimedes. We need someone to work in our magazine department to provide technical support.

The successful candidate should have a good knowledge of programming in Basic, and preferably an understanding of Assembler. Experience of using these languages on a BBC micro is highly desirable. The work will involve dealing with technical queries relating to our magazines, evaluating contributions, writing, editing and testing programs for use internally or for publication, and generally providing technical expertise and support.

If you are interested in working for a friendly but go-ahead company in an interesting and challenging job then we would like to hear from you.

To apply, write to The Personnel Manager at the address below, giving full details of yourself, your education and work experience (if any), and convince us you are the right person for the job.

**BEEBUG Ltd, Dolphin Place, Holywell Hill,
St Albans, Herts AL1 1EX.**

Mijas Software

Bringing the new software world to YOUR BBC Micro

The Professionals
choice for
65(C)02 Systems

The Complete Software Development Package For the BBC B and MASTER

Small 'C'

Many times faster than BASIC, 40K+ Program space in stand-alone mode.
Makes testing easier, save time, patience and printer paper.
Full implementation of Small 'C' with BBC graphics extensions.
Professional-style assembler, modular, relocatable, disk to disk.
Full Specification Linker giving compact run-files anywhere in memory.
Full Source Code provided for the 'C' compiler, add your own features!
Source-Level Debug for rapid and effective testing of 'C' or assembler.
Full Library facilities, 'C' and assembler Libraries provided (with sources).
Post-sales support, low cost updates.

*Complete System for
MASTER or BBC B
with 64K of s/w RAM
Included on 80T disk
Small 'C', Assembler, Linker
and Source-Level DEBUG*

£50

Check with us for
availability on other systems.

New Product

Professional printing you can afford today. Our new LASER TYPESETTING PROGRAM prints multi-window multi-column, multi-page Text & Graphics.

Software £25. Requires one of the new low-cost Laser printers with proportional fonts. Written in Small 'C' to run on any BBC B or MASTER.

Coming Soon

Development system for the new versions on the 6502 as well as the 6502 and 65C02.

Write software for single board computers and other industrial applications using your BBC computer. Available early 1989.

Write for full details
or order today from:-

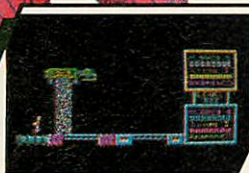
Mijas Software
Winchester Rd.
Micheldever
Winchester
Hants SO21 3DG



Existing Users — Update your system to Version 1.5k — send £5 and your old disk
New features, faster code, updated linker, extended libraries.

ZENON

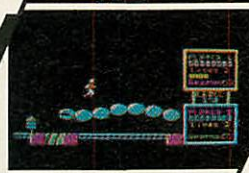
1 or 2 Player Action
Keyboard or Joysticks



Beaming down to start your mission



Alone in the thick of the action



Your jetpack boosts you away from the Terrapede



Together you can fend off attacks from front and rear

ZENON - You wouldn't dare

Imagine a land so dangerous that only the most heroic of space explorers would dare to tread. A land filled with more evil foes than can possibly be overcome.

Imagine Zenon

Zenon is total arcade action for one or two players. Playing alone is fantastic. Playing simultaneously with a friend is unbelievable.

Beaming down to the surface of Zenon from your intergalactic cruiser immediately puts you into the action amongst a host of deadly androids, meteorites, fireballs, missiles and other unforeseen perils. Set against a background of scrolling stars you must run for your life or boost into the air using your atomically-powered jetpack.

Initially you are armed with only a simple Repeat Laser which you will quickly find inadequate to deal with the sheer volume of enemies. Watch out for the opportunity to grab more powerful weaponry including the Twin-Shot Laser, Atomic Blaster and not forgetting the ultimate weapon - the lethal Machine Laser.

No space explorer has yet reached the heart of Zenon. There are 250 levels to be completed and new inconceivable monstrous androids will try to thwart you as you advance.

No one knows all of the aliens that await you, but many will undoubtedly require several hits to destroy them. Documented proof exists of only a few: the massive Terrapedes (snake-like androids), Orbitroids (giant steel eyes), Roamodrons (walking machines) and various types of Shapeoids; plus Rods, Zebbadoids, Packoids, Duckadrons and Rambodroids.

Don't go alone.....

HOW TO ORDER

Simply fill in the coupon and send with a cheque or postal order to Impact Software.

- All "ZENONS" despatched by 1st Class Post on same day as order. (Unparalleled Service).
- Free postage and Packing.

IMPACT
Software

Impact Software
Neepsend House
1 Percy St.
Sheffield S3 8AU
Tel. (0742) 769950

To: Impact Software, Neepsend House, 1 Percy St., Sheffield, S3 8AU.

(BLOCK CAPITALS PLEASE)

Please send me the following:

ZENON Electron/BBC Cassette @ £4.95

ZENON BBC B/Master 5 1/4" disc @ £4.99

ZENON Master Compact 3 1/2" disc @ £6.95

I enclose a cheque/PO (made payable to Impact Software) for

£

(N.B. If there are any other games you would also like to order at the same time please see the comprehensive Impact Games Club advert elsewhere in this magazine).

Name

Address

Postcode

△ ...a fax machine
and more



FAX • P A C K •



With the ever increasing popularity of FAX machines this form of document communication is set to replace conventional postal deliveries with a fast, reliable, strike free, electronic mail service.

FAX PACK brings this world of facsimile document transfer to the Archimedes. By combining the facilities of a FAX machine with the power and flexibility of a computer, FAX PACK offers considerable benefits over conventional FAX systems.

FAX PACK basically allows any document, be it printed text or graphics, or an electronic document such as a word processor file, to be sent to FAX machines anywhere in the world, in seconds. This is done by scanning (digitising) the document and then sending it digitally over a normal phone line to the receiving FAX machine which re-constructs the image and then prints it.

THE HARDWARE

The basic FAX PACK consists of a modem podule that plugs into any Archimedes computer, and the software to drive it. A variety of options are available such as scanners and power switching boxes.

The podule has connections for a scanner and power switching box (see below) and a conventional telephone line. An adapter is provided allowing a conventional phone to be paralleled with FAX PACK so that only one telephone line is required for both FAX and conventional use. However if a lot of FAX mail is going to be sent/received then a separate dedicated line is advisable.



Scanner & Sheet Feeder

Unlike many normal FAX machines the hardware also provides both auto-answer and auto-dial facilities making it convenient and allowing completely automatic operation without human intervention.

THE SOFTWARE

As part of FAX PACK this not only provides all the basic mechanisms for communicating with FAX machines but also includes high level WIMP based facilities for viewing FAXes on screen within a window, where they can be pixel edited, scaled, cropped, printed, etc.

This WIMP based software is simplicity itself to use so FAX PACK can be used in the office by staff with little or no computer experience. Of course unlike any conventional FAX machine FAXes can be viewed on screen, or filed away on disc for future reference without ever getting onto paper.

The software also allows text, word processed files, even graphics, to be automatically converted to a suitable FAX format for sending to other FAX machines. The paperless office becomes closer to reality since it is now possible to write articles, documents or letters and then send these directly to remote machines without involving paper.

However facilities are also included for printing FAXes to a range of 9 and 24 pin dot matrix, inkjet and laser printers.

SUPER FAST MODEM

The FAX podule actually consists of a 9600 bps auto-answer, auto-dial modem, and so can be used for much more than just FAX transfer. The software can detect the type of remote machine, and if it finds a similarly equipped computer (rather than a FAX machine) at the other end it can then transfer ANY file fully error checked and glitch free. And by using some very advanced transmission protocols it can transmit data 4 times faster than most conventional modems on normal telephone lines.

THE SCANNER

In order to send printed material it is necessary to digitise the page. An optional hand-held, A4 width, 200 dpi scanner can connect to the FAX podule. Being hand-held it is not only supremely compact, but it can digitise complete A4 pages, or pages from books or other awkward shaped documents.



Of course images scanned in this fashion are not only useful for FAX purposes but also for inclusion in word processor or desk top publishing programs. FAX PACK software allows company logos and signatures to be scanned, cropped and then included as part of other FAXed material.

AUTOMATIC POWER SWITCH

This external power switching box can automatically switch the computer on in order to answer incoming FAXes. The FAX podule can then answer the phone, receive the FAX and file it to disc, and then switch the computer off again. The computer can therefore be switched off and left completely unattended for very long periods of time.

GUARANTEE

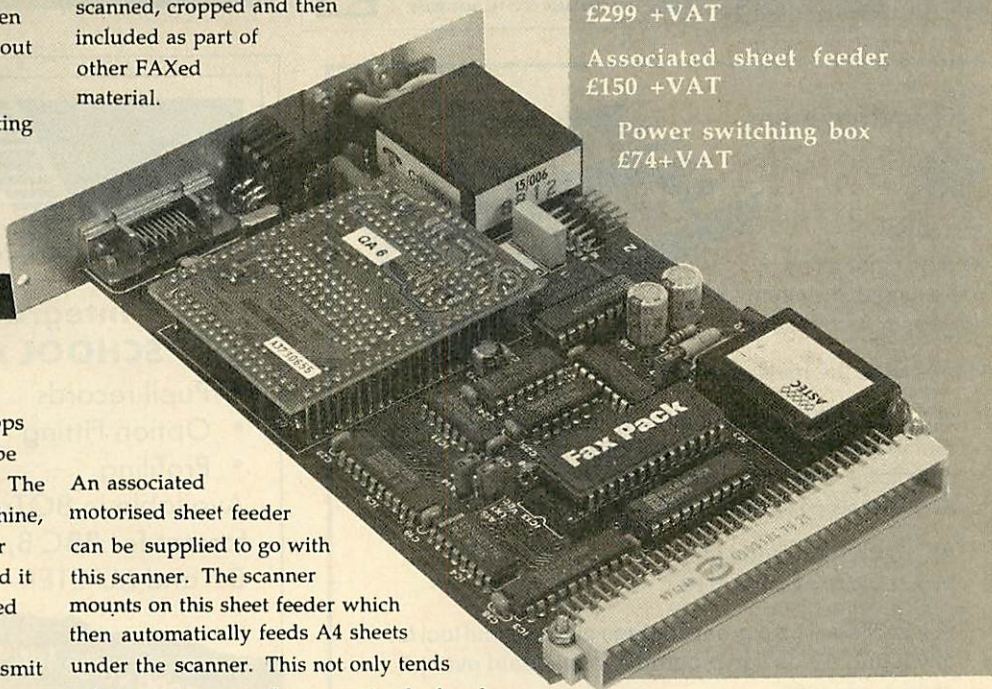
Not only do we provide a one year guarantee for the product, but also a 28 day money back no quibble guarantee. Owners can also receive free software updates as enhanced or new facilities are made available.

FAX PACK Podule and software
£499 +VAT

200 dpi hand-held scanner
£299 +VAT

Associated sheet feeder
£150 +VAT

Power switching box
£74+VAT



An associated motorised sheet feeder can be supplied to go with this scanner. The scanner mounts on this sheet feeder which then automatically feeds A4 sheets under the scanner. This not only tends to be more accurate than scanning by hand, but is also more convenient.



Computer Concepts Ltd

Gaddesden Place,
Hemel Hempstead, Herts. HP2 6EX
Telephone: 0442 63933 Fax: 0442 231632

The above prices include post and packing. Contact Computer Concepts or your local dealer for prices and availability.

SOFTWARE Suitable for standard, Master Series and Archimedes Computers

| | | |
|---------------|---|---------|
| Business | CASHBOOK Double Entry bookkeeping in memory for clubs | Inc Vat |
| ★★★★ | CASHBOOK Double Entry random access disc bookkeeping for schools | £13.74 |
| | ACCOUNT Double Entry random access bookkeeping with credit control, statements, ledgers and analysis for businesses | 22.94 |
| | ACCOUNT PLUS as above with data sort, auto statement generator, invoice, order, quotations etc. mail shot merge etc | £34.44 |
| ★★★ | MICRO-TRADER The complete BBC accounts system. (Demo disc.£25) | £57.44 |
| ★★★ | MICRO-STOCK 4000 items suitable for use with Micro-Trader | £230.00 |
| | RANDOM MAILING mail merge, 5 sorts, 1,2, Or 3 across labels | £86.25 |
| | EXTENDED PAYROLL "Impressive package - Micro User" | £34.44 |
| | 1,2,4 weekly & monthly, contracted in & out, 3 overtime, personnel file, 2 payslip formats, plus, plus (Version suitable for IBM PC or MS-DOS compatible) | £57.44 |
| ★★★ | SPECIAL THREE STAR OFFER - ALL THREE STAR PROGRAMS | £49.95 |
| Statistics | STATPACK the stats package for students, 30 different results | £89.95 |
| Genealogy | FAMILY TREE 340/750 people 100/250 marriages. Ancestral, descendant & family tracing with full tree printout, sorted list. Review in Feb '87 issue | £11.44 |
| ★★ARC★★ | FAMILY TREE 3500/6000 people 1500/2000 marriages Archimedes | £19.95 |
| | | £24.95 |
| DFS/ADFS | We convert your DFS discs to ADFS Master or Archimedes D/L format | £4.50 |
| ROMS | INTER-BASE The successful database ROM from Computer concepts | £49.95 |
| | INTER-CHART data display "Quite clever - well very clever" | £30.00 |
| | INTER-SHEET spreadsheet "Not bad! - its the best" | £45.00 |
| | INTER-WORD "The WISIWYG super wordprocessor I use & taught with." | £47.00 |
| | SPELL-MASTER The fastest, largest spelling checker anywhere | £54.95 |
| | DELTA-BASE "The economical database for the Archimedes" | £29.95 |
| | SYSTEM DELTA "The cleverer than clever program language database" | £62.95 |
| eprommer | SYSTEM DELTA extended programming language manual | £19.95 |
| | UVIPAC Eprom Programmer. 16k or 32k models please specify which. | £21.50 |
| | UVIPAC Eprom Eraser that handles 3 eproms at a time | £21.50 |
| | Toolkit Eprom Blower Software on ROM | £7.95 |
| Computers | AMSTRAD PC1512 Dual Disc Drive Mono complete with £300 software | £573.85 |
| | AMSTRAD PC1512 Dual Disc Drive colour " " " " | £731.40 |
| | AMSTRAD PC1640 Dual Disc Drive Colour CGA " " " " | £849.85 |
| ★★ New ★★ | AMSTRAD PPC640 Lap top IBM PC compatible portable | £449.00 |
| | AMSTRAD CPC684 Green Screen monitor and Wordprocessor ROM | £199.00 |
| | CAMBRIDGE Z80 Full range for this superb machine available. | £320.85 |
| | ACORN MASTER 128 | £449.00 |
| | ACORN ARCHIMEDES Full range available. | P.O.A. |
| BBC/IBM/BBC | Description of how to send data between the two machines | £4.95 |
| PRINTERS | Large range of printers available. Please ask for latest prices. | P.O.A. |
| | RIBBONS, FX, RX, LX-80, 120D, GLP, Amstrad, Shinwa from | £3.50 |
| DISCS | PRINTER CABLE Suitable for BBC/Electron to parallel printers | £7.95 |
| | DISC DRIVE 800k Cumana or similar twin double sided cased, 40/80 | £274.85 |
| | DISCS 5.25" 10 Double sided/density 40/80 tracks 5 colours boxed | £9.95 |
| | DISCS 3.5" 10 branded double sided highest quality, boxed | £12.08 |
| LISTING PAPER | Box 2000 fanfold perforated 11" x 9.5" 60 gsm (Best value paper) | £13.45 |
| LABELS | For Mailing 2000 2 across 3.5" x 1.4375 | £11.45 |
| | For Mailing 1000 3 across 5" x 2.75 x 1.4375 | £6.33 |
| | for Disc labelling 500 1 across 5" x 15/16" | £2.95 |

Ask for detailed brochure for more software and other items.
Prices include VAT. Add 57p for p/p. Printers add £9.95
PLEASE NOTE OUR MOVE AND CHANGE OF ADDRESS FROM CORNWALL

Micro-Aid

Kildonan Courtyard, Barrhill, S. Ayrshire,
Scotland. KA26 0PU. Tel: 0465-92288

DAISY WHEEL IMPACT PRINTERS AT LESS THAN WHOLESALE PRICES!

£75-YES-£75

(Plus VAT and Post and Packing)*

AND THIS IS WHAT YOU GET . . .

SANYO PR3000 DAISYWHEEL PRINTER

Brand new in manufacturers original cartons

Centronics parallel interface, 8 CPS (Shannon text) Printing Speed, Elite 95 Character Daisy Wheel, 10/12 ch/inch Selectable Character Pitch, 1000ms/6.67 inches CR Speed, 8.5 inches Paper Width, 6.67 inches (80ch/12 pitch 66 ch/10 pitch Print Width, Copy 1 sheet original Plus 3 copies copy capacity.

RWE has concluded an amazing bulk purchase of these brilliant printers—normal recommended price £199+VAT and is able to offer them at the bargain price of just £75 plus VAT, Postage and Packing. Immediate delivery whilst stocks last!!!

Send your cheque for £92.00* payable to:



RW Electronics

ROBERTS WARR ELECTRONICS LTD.

P.O. Box 2, Honiton, Devon, EX14 0NB

Tel: 040484 568. Telex: 42513 Sharex. Fax: 040484 575

Ace Computing



Euclid

The 3-D modelling and animation system for the Acorn Archimedes.

Here's what the reviewers say:

"...remarkable value. It already matches or exceeds many functions of other visualisation packages—most of which are far more expensive."

A&B Computing October 1988

"...very useful indeed."

Micro User September 1988

"...Euclid will be a great success and a useful tool for any future 3D design programs (a standard even)."

Archive July 1988

"...well worth the attention of anyone interested in this field."

RISC User July/August 1988

EUCLID - Explore a new dimension!

Price: £45 (inc VAT and P&P).

Available by mail order from:

Ace Computing, 27 Victoria Road, Cambridge CB4 3BW.

Or from your local dealer.

Ace Computing



Integrated Software for SCHOOL ADMINISTRATION

- Pupil records
- Option Fitting
- Profiling
- Timetabling Aids

Available in 80Track format for BBC B, B+ and MASTER

"very good value for money and ... would quickly repay this cost in saved time"

Micro User

- Ongoing Development
- Full Support
- Updating service

MAIN SYSTEM PRICE £160



0602 31 2180

FURTHER DETAILS
David Harding
37 Bridle Road
BURTON JOYCE
Notts. NG14 5FS

REVIEWS

THE GAMES PAGE

FIGHTING FUN

Sam Greenhill surveys the best and the rest of games to get hooked on

Over the past year there have been fewer games on the BBC and Electron market than in previous years, but software houses have made up for this by adding quality to their products. One of the reasons could be the advent of the Archimedes – a number of companies, notably Minerva, have pulled out all their resources to produce software for the 32-bit machine, and have rather neglected the Beeb.

There were only about 30 games that I considered for nomination, not enough I thought, for a real Top Ten. I decided to narrow the field down to just five of my favourite 1988 games. There is a very small pool of BBC games that I've been unable to get my hands on for previewing in this column, so they don't stand a chance of being nominated for the Top Five, any more than the games that appear after my deadline, though these will be reviewed next year.

In addition to my Top Five, I've compiled a Top Three award to cater for Archimedes owners, but more about this later....

THE TOP FIVE

1. Exile; Superior software

Graphics: ★★★★★

Addictiveness: ★★★★★

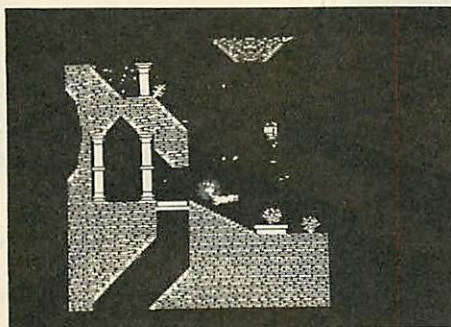
Value for money: ★★★★★

It pains me to consider the complexities involved in writing a game such as superior's *Exile*, but I can assure you the results are definitely worth it. Ever since I got my copy I've been inventing excuses to play it, and this includes a theory that sleep isn't necessary.

Set in the future, you are returning from a mission when your spaceship receives a distress call from the planet Phoebe. A party of travellers have been

abducted by the evil professor Triax. In addition to rescuing the stricken crew, you must also find supplies for your own ship, and deal with many futuristic pests – all in a vast underground labyrinth.

This game outsmarts all others for this year and I recommend you get it soon, especially if you have a Master or a BBC with some sideways RAM.



2. Tetris; Mirrorsoft

Graphics: ★

Addictiveness: ★★★★★

Value for money: ★★★★★

Although the graphics and sound of this game wouldn't be enough to make you look twice, only a few goes and you're hooked. The object? Fit falling shapes exactly into a block without producing any holes. A game of simplicity, but very addictive. It also represents some sort of milestone in *glasnost*, as it was originally coded in the Soviet Union, and only converted over here by Mirrorsoft.

Tetris is a perfect example of how a game can be good on an addiction factor alone, despite poor graphics and sound.

3. Icarus; Mandarin

Graphics: ★★★★★

Addictiveness: ★★★★★

Value for money: ★★★★★

Icarus is Mandarin's first attempt, although originally programmed by Powerhouse, and it's a good one. Battle through 20 decks to reach the ship's

computer – and on the way shoot the lifts disgorging killer droids. Nothing particularly new here, but when added to the facility for two players to work together, again in itself nothing new, the combination works well and a good game is produced. The only thing that seems to be missing is a screen designer. Also look out for Mandarin's Level 9 adventures; they're good, especially the latest, *Lancelot*.

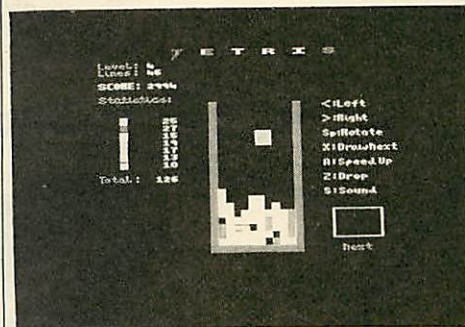
4. Empire Strikes Back; Domark

Graphics: ★★★★★

Addictiveness: ★★★★★

Value for money: ★★★★★

Just like the film, the Empire is not defeated by the destruction of the Death Star, and returns to seek revenge. If you've seen the film, there's not much to describe. If you haven't then you should have – I haven't got enough room here! However I can tell you that it is a worthy enough sequel to *Star Wars*. But the bad news is that Domark's part three, *Return of the Jedi*, will not be making an appearance on an Acorn machine.



5. Pipeline; Superior Software

Graphics: ★★★★★

Addictiveness: ★★★★★

Value for money: ★★★★★

This is Superior's second title in the chart, and it's the sequel to *Ravenskull* (which incidentally came fifth last year!). *Pipeline* was written by two 15-year-olds

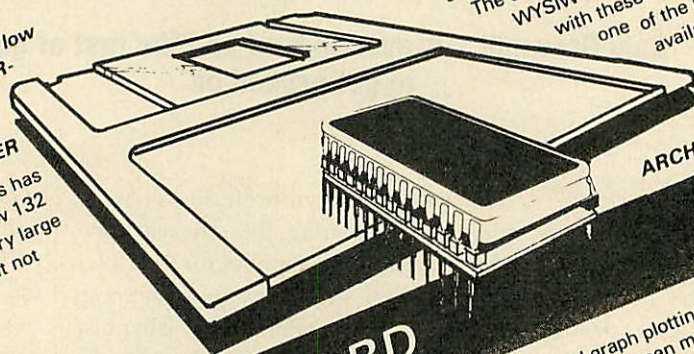
Software for the Archimedes now available on disc...

Computer Concepts is now releasing new low cost DISC versions of its popular INTER-

products for the Archimedes.
WORD, SHEET, CHART and SPELL-MASTER

A simple to use but powerful spreadsheet. This has also been altered to take advantage of the new 132 column and 64 line screen modes allowing very large sheets to be viewed on screen. Easy to use but not lacking in facilities.

▽ **ARCHIMEDES DISC £29.00 + VAT**
ARCHIMEDES ROM £39.00 + VAT



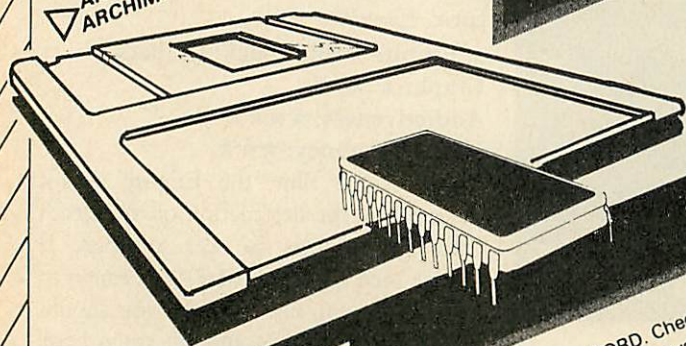
INTER-WORD

ARCHIMEDES DISC
£29.00 + VAT
ARCHIMEDES ROM £39.00 + VAT

Inter-Word has now sold over 30,000 copies, making it one of the most popular products ever released for the BBC. The Archimedes version has several improvements including support for colour, and for almost a complete page to be seen on screen at once. The existing features, such as auto formatting, WYSIWYG display and super fast scrolling together with these new enhancements ensure this is still one of the most effective word processors available for the Archimedes.

A chart and graph plotting program, now supporting the 256 colour screen modes which can produce impressive colour charts and graphs. An ideal complement for INTER-SHEET, although it can plot graphs from practically any data.

▽ **ARCHIMEDES DISC £19.00 + VAT**
ARCHIMEDES ROM £25.00 + VAT

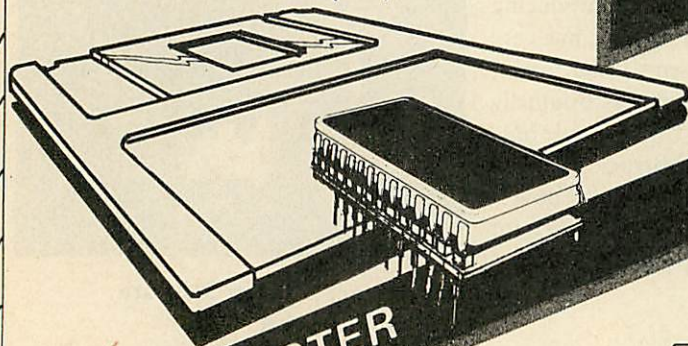


INTER-SHEET

An ideal partner for INTER-WORD. Check as you type, new intelligent guess routines, crossword solving etc. This is a native ARM product, and does not need the 6502 emulator.

▽ **ARCHIMEDES DISC £39.00 + VAT**
ARCHIMEDES ROM £51.30 + VAT

INTER-CHART



SPELL-MASTER

The INTER products run under the 6502 emulator but with some enhancements and other changes to suit the Archimedes. They are all compatible with the BBC versions and can load BBC files with no changes. No ROM-LINK facilities are available.



Computer Concepts Ltd

Gaddesden Place,
Hemel Hempstead, Herts. HP2 6EX
Telephone: 0442 63933 Fax: 0442 231632

Access/Barclaycard welcome.

REVIEWS

THE GAMES PAGE

and the idea is to collect 'collectables' while dodging through a maze of pipes and monsters. It's a good game because of the ability to design practically everything yourself.

ARCHIMEDES TOP THREE



1. Zarch; Superior Software

Graphics: ★★★★★

Addictiveness: ★★★★★

Value for money: ★★★★★

It is unusual for the first game on a new machine to be good, never mind come first, but I still think *Zarch* is the best game available for the Arc to date. There isn't much to describe – anyone with an Archimedes will already have *Lander*, but *Zarch* takes a good thing further and if you haven't already bought this game then make a point of doing so. Although the game doesn't 'develop' much after your first flight, it is still great fun. It has also been ported onto the Atari ST, and (laughably) the Spectrum. Arc owners will be cheered to know they have the best version.



2. Terramex; Grand Slam

Graphics: ★★★★★

Addictiveness: ★★★★★

Value for money: ★★★★★

Terramex is Grand Slam's first game for an Acorn machine, and it's a particularly good debut. You are one of five explorers on the trail of Professor

Eyestrain who, to cut a long story short, is the only one who can save the world. Set in a weird and wacky world of funny creatures and excellent graphics, the game is highly amusing and very playable. Another good feature is the stereo backing – easily the best sound on the Archimedes yet.

A good arcade-adventure.



3. Quazer; Impact Software

Graphics: ★★★★★

Addictiveness: ★★★

Value for money: ★★★★★

Although there are two *Uridium* clones out for the Arc, *Alerion* by Dabs Press and *Quazer* from Impact Software, they are virtually identical and so almost came joint third. Due to *Quazer's* slightly lower price, I've chosen it to collect the honours. The idea is to fly over a landscape plastered with gun stations, destroying various targets while shooting interceptor aircraft. With some slight variations, the games are very similar and very addictive.

I think I slightly prefer the graphics in *Alerion*, and the idea of flying over a 'homebase' to allocate a fall-back position should you die struck me as very novel.

But on the other hand, *Quazer* has a catchy tune and only one fire button!

Superior Software, Regent House, Skinner Lane, Leeds LS7 1AX.

Mirrorsoft, 66-73 Shoe Lane, London EC4P 4AB.

Mandarin, Europa Hse, Adlington Park, London Road, Adlington, Macclesfield, Cheshire.

Domark, Domark House, 22 Hartfield Road, London SW19 3TA.

Grand Slam, 12-18 Paul Street, London EC2 4JS.

Impact Software, Neepsend House, 1 Percy Street, Sheffield S3 8AU.

And now for some miscellaneous comments. Tynesoft receives a prize for its vast numbers of fun simulations, especially for the lion-taming in *Circus Games*. Unfortunately I haven't been able to get hold of a copy yet, likewise for *Superman*, its other game. But you never know, either of them could have been my number one!

Minerva gets an award for producing the greatest number of Archimedes games – not one of them made it into the Top Three, although *Orion* was very close and the latest, *Jetfighter*, wasn't ready before my deadline. Actually, Minerva gets two prizes, its second one being for the most absurd idea for a game ever invented; *Freddy Phrogg*, come on down! (See page 129).

If Superior can look up from its compiling for a few seconds, then it'll see that it has received a prize for its series of *Play it Again Sam's*. At present it's stalled at *Play it Again Sam 6* (or is it 7?), but by the time this article comes out I estimate the figure to be somewhere around the 26 mark.

Sam was said to be too busy to be present at the ceremony.

I've had some new *Revs* times sent in to me that beat L Surguy's records! Unfortunately I've managed to misplace them. Could whoever sent them bear to give me another copy?

On the subject of *Revs*, I've had a letter from a Barnes Cook all the way from America who claims to have a Brands Hatch time of 1:21.3, that's 2.4 seconds faster than the current record. Barnes says he has a Beeb and was sent a copy of September's *Acorn User* by a friend in which I made a plea for faster *Revs* times.

The main news in the games world this month is a new *Repton*. *Repton Infinity* is a complex games designer, that you can use to build up your own games: *Repton*, *Ravenskull*, *Pengo*, *Pipeline*, possibly even *Space Invaders* and a spreadsheet – they are all possible. It comes with three example games, and you can compile any number of new versions. It should be out mid-November.

Next month's Games Page will be back to normal, but this doesn't give you an excuse to miss it!

PRIZE COMPETITION
Can You Design the
Best Archimedes
Repton 3 Screen?

Archimedes

PRIZE COMPETITION
Can You Become the
Archimedes Repton 3
World Champion?

REPTON 3

REPTON
THRU TIME



The Life Of
Repton



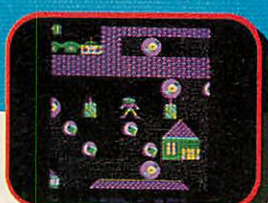
Around the World in 40 Screens



Repton 3



Around the World
in 40 Screens



The Life of
Repton



Repton Thru Time

ARCHIMEDES REPTON 3 The Thinking Man's Arcade Game

The Repton series of games is the most successful software ever published for the BBC Micro/ Electron computers and has aptly been described as "the thinking man's arcade game".

Now, a massive enhanced version is available for the Archimedes, comprising four complete games:

- Repton 3
- The Life of Repton
- Around the World in 40 Screens
- Repton Thru Time

Enhanced game features include:

- A choice of four tunes
- A position Save/Recall facility

In addition, the software includes a sophisticated **Screen Editor**, and a **Character Editor** with a choice of 16 colours from a total of 4096 hues. An enhanced feature is that you can design new screens on the Screen Editor and immediately test them by entering the game section.



The Character Editor
Rory McRepton brandishing his claymore!



The Screen Editor
Redesigning an Egyptian Repton screen

For the Archimedes computer: **£19.95** (on 3 1/2" disc)

**SUPERIOR
SOFTWARE
Limited**

(Acornsoft is a registered trademark of Acorn Computers Ltd. Superior Software Ltd is a registered user.)
Dept AR1, Regent House, Skinner Lane, Leeds LS7 1AX. Telephone: (0532) 459453

ACORNSOFT

Please make
all cheques
payable to
"Superior
Software Ltd".



24 HOUR TELEPHONE
ANSWERING SERVICE FOR ORDERS

OUR GUARANTEE

- All mail orders are despatched within 24 hours by first-class post.
- Postage and packing is free.
- Faulty cassettes and discs will be replaced immediately. (This does not affect your statutory rights.)

REVIEWS

GAMES

MOON WALKING



Clogger; Impact Software, BBC and Electron cassette £4.95, 5.25-inch disc, £4.99, or 3.5-inch disc, £6.99

Clogger is Impact Software's third game and carries with it a strange and mysterious story-line. The curious Clogger is a type of creature with three feet and no head, as depicted on the flag of the Isle of Man.

The Cloggers have a great love for art, and juvenile cloggers must prove their artistic appreciation by undertaking a series of tests. The tests come in the form of levels not at all dissimilar to the *Repton* series – 18 landscapes in three files of six. Each level has a map like *Repton* and in each the Clogger must collect pieces of a painting, which it uses at the end to build up a picture.

The bad news is that there's a time limit, and the good news is that pneumatic drills are on offer – useful for a stubborn brick wall. There are also springs, lawnmowers and 'rebounding gyroscopes' to deal with. I know the games scene is getting conventional, but this is ridiculous!

Compatibility was a problem, and I only got the game working on the third Beeb I tried it on – removing most of the ROMs. In play the game is virtually identical to *Repton*. Cloggin' along and pushing around puzzle pieces is the long and the short of it, but nibbling at cakes and fruit and mowing the deadly grass do liven things up slightly.

The characters are of only average graphical quality, but the animation passes without fault. Maps are available, and there is also an enlarged picture of the painting your Clogger has to produce.

Despite an amusing scenario, *Clogger* is

just a three-legged *Repton*. Although it's less than £10, I can't recommend this very strongly.

Sam Greenhill

MEDIEVAL QUEST



Lancelot; Mandarin, BBC B, B+ and Master, 5.25-inch disc, £14.95

Can you complete the quest for the Holy Grail? That's the question being asked in Level 9's latest release, *Lancelot*, available through Mandarin.

You play the leading knight of King Arthur's Round Table, Lancelot, whose ultimate goal is to retrieve the Holy Grail. The game is played in three parts; Camelot, Logris and The Quest for the Holy Grail. I managed to complete the first part with difficulty but didn't do particularly well on the other two.

Lancelot has a medieval atmosphere which is enhanced by being written in 'ye Olde English' – which you'll either find fun or intensely annoying. Either way it's easy enough to understand. The instruction booklet describes the game well and includes a shortened version of Sir Thomas Malory's 'Morte d'Arthur'. I suggest you read the instructions carefully, even if you're a regular Level 9 fan.

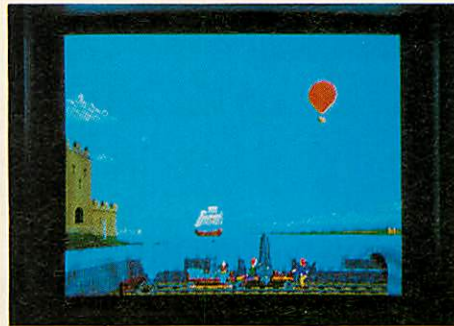
Lancelot has some good features, including an undo command which retraces your last instruction. When you run the game you get a choice of where to start, but first-timers should begin with the Camelot section.

I like this game purely for the text. The graphics are reasonable but should have been better. The colouring of the graphics isn't very good, but the BBC's limitations are to blame.

Lancelot is to the usual high standard of Level 9.

Michael Barnes

CASTLES AND CANNONS



Freddy's Folly; Minerva, Archimedes, 3.5-inch disc, £14.95

Freddy's Folly is one of the latest from the Minerva Archimedes games department. In *Freddy*, you own one of two castles that are separated by a narrow sea. The other is owned by Sir Freddy Phrogg, who is jealous of your palatial dwelling and intends to destroy it. To thwart the attack – made in hot-air balloons – you have a single cannon mounted on a cart and a three-person crew. But Freddy has pre-empted this and employed several gun-ships, each of which has a go at defacing your battlements. The ships have far more cannons than you do and I fail to understand why they don't all concentrate their efforts on your castle – they'd succeed!

The game uses detailed and picturesque sprites throughout, which are very smartly animated. Not only is the entire framework of the game amusing, but there are many little quirks added too. For example, one of the gunships blew a hole in my cannon's track and, being the clever player I am, I pushed the cannon down the hole. One of the operators fell down with it, so the other two came over and helped him up again!

At the end of the game a statistic chart is displayed, and the cannon is rolled off while one of the operators juggles with cannon balls. Good fun, but it took me no longer than 15 minutes to sink all the ships and destroy the balloons. Left with nothing to do, I turned off my Arc and walked away. The game is too simple.

Freddy's Folly is graphically impressive, the sound is good, and the game is highly amusing, but I'm afraid that's all.

Sam Greenhill

REVIEWS

GAMES

IT'S A YUPPIE'S LIFE



Corruption; Rainbird, Archimedes, 3.5-inch disc, £24.95.

A couple of years ago, Rainbird released a game that was to change the face of adventure games. *The Pawn* was regarded by many as the definitive graphical adventure. Versions were released for virtually all the computers around at the time, except the humble BBC. Now that Acorn has ventured into the 32-bit

market Arc owners can at last experience the delights of Magnetic Scrolls' adventures like *The Pawn*.

Unlike the swords and sorcery-soaked plots of previous games *Corruption* is set in the bang-up-to-date City of London. You begin as a new partner in a firm of stockbrokers, and have to fight hard to keep your head above the financial water.

The game is littered throughout with the lifestyle trappings of the yuppie, from the CD player in your partner's office, through to the Porsches and BMWs in the underground car-park.

The packaging is of the high-quality expected of Rainbird and even that has not escaped 'yuppification'. All the instructions are printed on 6-hole 'filofax-type' paper. A cassette of the *Corruption* music, plus a doctored interview featuring 'yours truly', is included.

Unlike most other adventures, there is no ultimate quest, although staying alive could be regarded as important. Points

are awarded for carrying out tasks and overcoming problems. Like other games, these often have to be carried out in the correct order, and to make it really hard, all at the right time. Every move you make counts as one minute, so think before you act. With luck, there are many other people to meet on your travels - be kind to the Tramp, and whatever you do, don't let Nurse Stephenson catch you creeping about!

This has to be one of the best games I've ever played. For someone weaned on text-only 'classics' as *Philosopher's Quest* and *Snowball*, *Corruption* seems to have everything that I've ever wanted in an adventure game. With excellent pictures to illustrate the locations and a command parser that understands even complex sentences, *Corruption* gets top marks in my view. Well done Rainbird! Now let's have *The Pawn*, *The Guild of Thieves* and *Jinxter* to complete the set.

Robert Miller

BOLO!

THE FIRST TRUE MULTI-USER GAME OF ACTION, STRATEGY AND ALLIANCE!

- FOR UP TO 16 PLAYERS!
- VAST GRAPHIC PLAYING AREA
- USES SIMPLE RS232 LINK - CABLE SUPPLIED!

BOLO is the first in a new generation of networking games! A mammoth tank battle to gain control of an island by offensive action, strategic planning, and alliance! The main aim is to knock out the enemy tanks and capture and hold the island's refuelling bases! To achieve this you'll have to tame the hostile terrain by clearing forests and building roads and bridges; build up strength by capturing pillboxes, laying minefields, and constructing defensive fortresses; form and break alliances with other players!

Each player uses his/her own computer and monitor, with their own view of the map of the island - you can see what an enemy is up to in the sector that you are looking at, but you will not be able to see what they're doing at the other end of the island! But you can send messages to other players, thus allowing communication and the formation of alliances!

BBC Version - £29.50 Disk only - requires 128K RAM

Available only from... MIL, 12 Chiltern Enterprise Centre Station Rd., Theale, Berks, RG7 4AA. Tel. (0734) 302600

Send cheque/PO or phone with ACCESS or VISA number!



HI-TEK ENTERTAINMENT

REVIEWS

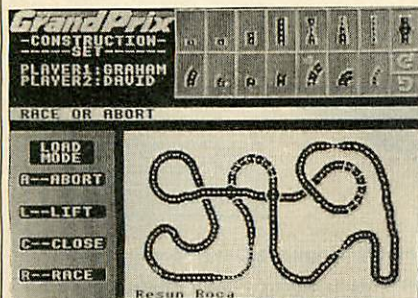
GAMES

COMING TOGETHER

One way of getting more mileage out of old games is becoming increasingly popular among the software houses – issue them as compilations and market the new package as value for money.

But are they? *Acorn User* invited three games enthusiasts to assess some of the latest offerings. Sam Greenhill wrestled with Mastertronic's *Megaplay*, while Mark Elmer and Paul Thornton explored *Play it again Sam*, Parts 3 and 4.

Mastertronic is one of the few companies in the BBC market which refuses to move with the times. To be fair, this is a compilation of some very old games, written in the days when almost any game was a winner. The package,



Grand Prix: create your own race track

apparently only available on tape, comprises six of the most boring games it has ever been my misfortune to review.

The first is *Galactic Patrol* and provides a simple exercise in destroying aliens. Next is *Vegas*, which presumably means it involves gambling of some kind. But it failed to load, so I shall never know.

The Way of the Exploding Fist is the best game on the tape. A standard martial arts game, with a complex set of keys to press. Sadly they aren't redefinable. But the game is bearable and a two-player option is available.

Eddie Kidd is the worst of the lot – a creative use of boredom. The idea is to jump over various obstacles on your motorbike. However, the run-up takes almost a minute: you are treated to trees and fences drifting by while the white lines on the road zoom past at an astonishing speed. When at last I was woken by ramming into barrels, I realised

that I had missed my chance to jump.

Geoff Capes's Martech strongman challenge makes an appearance too, but all I managed to succeed in doing with my newfound muscles was dropping a car onto my badly drawn figure's head – thus squashing myself flat. Finally, *Kane* 'entertained' me with atrocious music, pointless graphics and a boring challenge.

Most compilation reviews end with the words 'represents great value for money'. But not Mastertronic's collection, I doubt if any discerning games fiend would want to buy it.

SG The *Play it again Sam 3* package follows tradition and consists of four games, *Commando*, *Palace of Magic*, *Killer Gorilla* and its sequel *Killer Gorilla 2*.

Commando has a strong challenge – shoot enemy soldiers without getting wounded while battling through to a fortress, armed only with a machine gun and six grenades.

Palace of Magic has been described as *Citadel Part 2*, as the challenge in both is to find and activate the Transporter. You have been reduced to a dwarf by the evil wizard Caldeti. He has left you in one of his old homes, the eponymous palace. Your life depends upon energy that quickly runs out but is restored by collecting top hats.

Killer Gorilla was a classic: Micro-Power's answer to the then popular Donkey Kong arcade game. The idea is to avoid the barrels, bowls of custard and 'springy things', scattered across the scaffolding, while rescuing your beloved from the clutches of the gorilla.

Killer Gorilla 2 is Superior's own sequel and involves rescuing the kidnapped monkey who has been locked up in a steel cage. This time you are in the shoes of *Killer Gorilla* himself, and being about six shoe-sizes too big this causes problems in manoeuvrability. The worst part is the music, but it can be silenced.

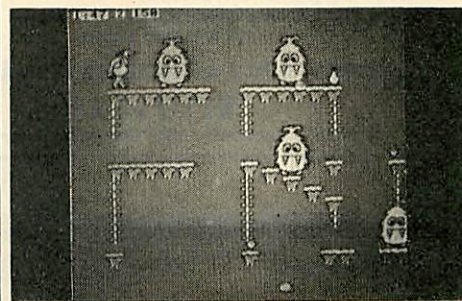
Overall, the compilation is a good one, and although a couple of the games are looking a bit dated, the package is held up by two very good titles.

ME Take three old games, plus one from Aardvark and one from Alligata, mix well: the result is Superior's *Play it again Sam 4*. There's *Spellbinder*, *Grand Prix Construction Set* (BBC only), *Frak*, *Guard-*

ian (for Electron only) and the new release *Cosmic Camouflage*. The Electron fares well, with a screen designer for *Frak* – something that would have been good to have on the BBC version – and *Guardian*, a sort of *Defender*.

Superior describes the completely new game *Cosmic Camouflage* as '...An exciting, new sequel to *Meteors*, with many novel, advanced features ...'. Most of the new features are aimed against the player! The game involves shooting rocks and the occasional spacecraft.

To add to the problems, just as you get used to moving about effectively, gravity takes effect, weakly at first, but becoming fairly strong in the later stages



Frak: has screen designer in Elk version

of the game. Manoeuvring in the strong gravity takes some getting used to, but I found it easy after a few games.

You gain one very useful trick – the camouflage cover. This is extremely useful, as when you cannot be seen you cannot be homed in on. The cover, warp drive and 'smart' bombs can be replenished by little canisters that are released when certain types of craft are hit – essential if you wish to stay alive.

I'd recommend *Play it again Sam 4* to anyone who has not already bought the games on it.

PT Superior's tactic of mixing old and new – and other company's games – gave it the edge in this consumer test. Certainly *Play it again Sam 4* won the most enthusiastic response of all, whereas Mastertronic won nothing but a ripe raspberry for repackaging the prehistoric in games software.

Megaplay by Mastertronic, available from Virgin Publishing, tape only £9.99. *Play it again Sam*, 3 and 4 are available on cassette, £9.95, 5.25-inch disc, £11.95, and 3.5-inch disc, £14.95.



ALPHA MICROTEC LTD.
SECOND FLOOR, 321 STRATFORD RD.,
SHIRLEY, WEST MIDLANDS B90 3BL.
TEL: 021-745 8998

Official West Midlands Centre for:-

- ARCHIMEDES
- MASTER 128
- ECONET
- MASTER COMPACT

AND THE ELECTRON

fully equipped Acorn-dedicated workshop on the premises
Acorn spares for sale to the public

THIS MONTH ONLY
ARCHIMEDES COMPUTERS
AVAILABLE ON
0% CREDIT

Second hand bargain corner:-

| | |
|---|-------|
| Acorn overview for Master 128 | 49.00 |
| Watford Shadow RAM | 25.00 |
| Viewstore ROM | 20.00 |
| Intersheet ROM | 20.00 |
| Interbase ROM | 20.00 |
| Watford view printer driver ROM | 10.00 |
| Cumana DUAL single-sided 40/80T disk drives | 99.00 |
| and MANY MORE ... | |

December hours of business Mon-Sat 9.15-6pm

021-745-8998

We wish all our customers a merry Christmas and a very happy new year



THE CONCEPT KEYBOARD SOFTWARE HOUSE

have moved to

OLD SOLENT HOUSE
111/117, FOUNDRY LANE
SHIRLEY
SOUTHAMPTON
SO1 3GB
Tel: 0703 701694

We are always interested in hearing about your projects using the Star Microterminals Limited Concept Keyboard and will consider publishing software on your behalf.

Please write to DAVID JUPP at the above address.

GRANNY'S GARDEN

FLOWERS OF CRYSTAL

WORLDS WITHOUT
WORDS

SNATCH

ZOOPAK

BOX OF
TREASURES

BIG CALCULATOR

DRAGON WORLD

SEND A5 22p SAE FOR BROCHURE OF OUR RANGE
OF QUALITY EDUCATIONAL SOFTWARE PACKAGES.
4MATION EDUCATIONAL RESOURCES, LINDEN LEA,
ROCK PARK, BARNSTAPLE, DEVON EX32 9AQ. TEL: 0271 45566

BUSH RESCUE

TELE-BOOK



**SPECIAL
OFFER**
FREE
Technical Reference Guide
Save £12 on all versions
Offer ends 31 Jan 1989



The Ultimate Assembly Language Development Tool

ADE+ is a 65C00 series assembler system supporting all the mnemonics of the 65C12 plus the additional 'Rockwell' instructions. ADE+ is fast, faster in fact than the in-built BASIC assembler and all rival products that we have tested. The assembler produces absolute code that can be 'RUN' or linker modules that can be merged with the output from other programs using the ADE+ linker. ADE+ supports a powerful linker which drastically cuts assembly time; a feature normally only found on minis and mainframes. Full library support for both the linker and the assembler is provided - fast searching for unknown instructions in a random access macro library. A print spooling system uses sideways RAM as a print buffer to eliminate waiting time; your listing runs off a background job! Use the print spooler from BASIC or your own programs. ADE+ uses ALL available memory. With a second processor attached the IO processor spare memory is used as a buffer to reduce the amount of disc access. All available memory is handled by ADE+'s intelligent memory management module. Use your own favourite editor or the one provided. Assemble from disc or memory. Full utilities include librarians, converter for BBC BASIC etc.

Features

- Runs on BBC B,B+, Master, Compact, ADFS, DFS, ANFS, NFS
- Full use of all available memory
- Intelligent memory management unit
- Automatic search for macros on disc
- Assemble absolute or relocatable code
- REPEAT, UNTIL, WHILE, WEND, etc.
- Macros nestable to any depth
- Excellent error diagnostics
- Linker
- Editor and symbolic disassembler provided

Access and Barclaycard welcome
Further information available

Versions and prices

Recommended for Master Compact
ADE+ MMU and 65C00 series assemblers on disc (3.5" ADFS) 32K sideways RAM required
£42.00 +vat

Recommended for BBC B,B+
ADE+ MMU and 65C00 series assembler on 2 16K EPROMS with DFS 5.25" utilities disc
£46.00 +vat

Recommended for Master 128, turbo
ADE+ MMU and 65C00 series assembler on EPROM cartridge with 5.25" DFS utility disc
£49.00 +vat

Please add £1.25 P&P per unit
Upgrades also available



Dept A
Fifth Floor, Sheaf House
Sheaf Street Sheffield S1 2BP
Tel: (0742) 768682

REVIEWS

H A R D W A R E

WORTHY PRINTER

The last Panasonic 24-pin printer we reviewed was a disappointment but the KX-P1124 is very good value, as Graham Bell discovered

The first Panasonic 24-pin printer *Acorn User* reviewed, the KX-P1540 (in August 1988), didn't find particular favour. Although it was the only wide-carriage model reviewed and had good paper handling, it suffered from poorer print quality than the competition.

Its newest model, the KX-P1124, seeks to redress this. It looks good, cool and business-like, and seems to be built well. The mouldings are substantial and a greater proportion of the mechanical parts are metal than with many printers.

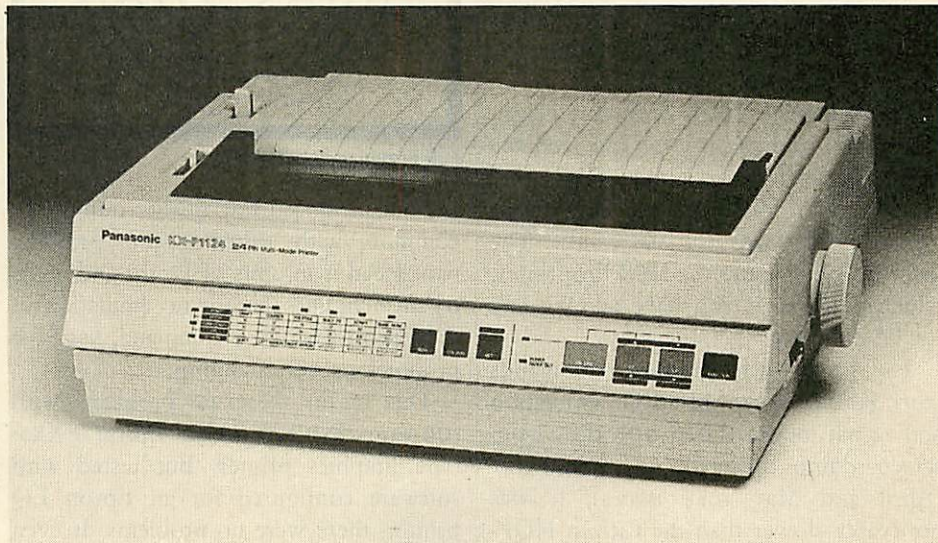
Putting the printer together is simple once you've found somewhere to put it, for this printer is considerably bigger than previously reviewed Epson and Star models. However, this means it is big enough to take A3 paper, which the Star LC24-10 and Epson LQ500 cannot do. The usual parallel cable is used to connect to the Beeb or Arc, but you can get a serial interface as an option.

The tractor feed can pull or push, and paper can be fed from the rear or from the front through a slot. This turns out to be ideal for feeding in sheets of letterhead or even envelopes – difficult on the Epson LQ models.

Fitting the cartridge ribbon is really easy, and like other Panasonic cartridges, it can be re-inked by pushing a button on the cartridge. This should reduce your ribbon costs.

But getting the printer to work with your micro is a little more difficult. There's a comprehensive front panel which allows you to set up all manner of font, pitch and paper combinations; there's also three 'macro' settings which store complete combinations.

I couldn't get the macro settings to work without some help from Panasonic. This was due to an error in the draft manual which is being amended. The intention is that you store commonly used printer settings – condensed Courier for printing spreadsheets, a proportionally spaced font for letters and so on. But



The rather noisy KX-P1124 scores on print quality and software compatibility

9-pin quality
Draft
Bold PS
Sans serif
Courier
Prestige
Script
Double
Laser quality

Draft to double shows range of built-in fonts

you can't use the macros to change between Epson and IBM emulation, which was what I wanted to do.

You have to go into a special mode to alter the initial set up conditions – the software equivalent of DIP switches. The manual suffers from a lack of clarity here. The special mode allows you to set the usual features like automatic line feed and the default font. But this relies on the front panel, and using it to set the default conditions is not simple – the markings on the front of the printer refer to normal use of the panel, not the special mode, so constant reference to the manual is necessary. A separate overlay

for the front panel would be a good idea. Macro 1 overrides some of the initial settings too – very confusing.

If you find DIP switches difficult to understand, this won't be easier. The best system is that on the NEC P2200, where the printer asks multiple-choice questions and you answer.

Paper parking is good – two buttons to press and the continuous paper slides out the back. You can then feed single sheets through the front or rear with a single button press, and another press brings the continuous paper back when you've finished. The excellent short tear-off allows you to feed the paper up half an inch, tear it, then lower it back down with two button presses – so you can tear within a quarter-inch of the bottom of a sheet of continuous paper.

The print quality is excellent, perhaps the best yet from a 24-pin printer; the figure shows the five resident fonts (Courier, Prestige, Script, Sans Serif and Bold PS) plus the fast-draft style. You can do italics, sub- and superscripts in letter quality, although you don't have the 'decorative' outlining or shadow options offered by, for example, the Epson LQ500 and the Star LC24-10.

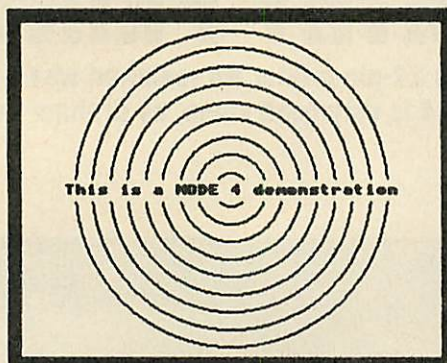
REVIEWS

HARDWARE

This is due to the printer emulating the Epson LQ2500, not the smaller LQ800 or 500 models. Plus there's no facility for adding new fonts on cards - you have to use downloadable characters. And if you decide you want to redefine the whole character set you must have the optional 32k printer buffer. The built-in 7k buffer is only enough for about 50 characters in LQ mode.

As recompense, there is double height and width, and the printer can feed the paper backwards reliably. The quiet mode is often vital, as the printer seems noisier than many of its rivals. The printer also emulates the IBM Proprinter, which is useful if you have an Arc and the PC emulator.

The Epson-style graphics commands work faultlessly, in both 8-pin emulation and 24-pin modes. Tried with the 24-pin screen dumps printed in *Acorn User* (April and May 1988 issues), it was noticeably slower than the Citizen HQP-



Full graphics compatibility...

40, but produced fine quality dumps. In common with other 24-pin printers, paper feed is in units of 180ths and 60ths of an inch, and there is no emulation of the Epson ESC * 5 command, used for proportional screen dumps.

This means there are problems with software that expects an Epson FX80-type graphics printer. But tested with software configured for an Epson LQ printer, there were no problems. It even



...with Epson LQ 24-pin dumps

works with the proportional spacing printer driver printed in September 1988's *Acorn User* - not all 24-pin printers do.

With a suggested retail price of £447, but typically selling for around £350, the KX-P1124 is very good value.

To sum up, the combination of good software compatibility and print quality recommends this printer, even though it is noisy and a bit difficult to set up.

MICRO MEDIA Computer Supplies Ltd.

5 1/4 Unbranded Discs

| | 25 | 50 | 100 | 250 |
|--------------|-------|-------|-------|--------|
| SS/DD | 9.30 | 17.50 | 31.92 | 69.90 |
| DS/40T | 10.40 | 18.64 | 34.48 | 72.50 |
| DS/80T | 11.60 | 20.80 | 38.80 | 81.80 |
| DS/HDPC AT's | 29.90 | 48.96 | 87.52 | 205.00 |

5 1/4 Coloured Discs

| | 12.45 | 23.56 | 39.96 | 91.50 |
|--------|-------|-------|-------|--------|
| DS/40T | | | | |
| DS/80T | 13.45 | 25.40 | 47.40 | 100.00 |

| 5 1/4 Reversible | 2 Index Holes & Notches |
|------------------|--------------------------|
| DS/40/80T | 14.90 26.95 51.95 118.95 |

| 3 1/2 | 10 | 20 | 50 | 100 |
|-------|-------|-------|-------|-------|
| DS/DD | 11.30 | 21.76 | 47.90 | 91.50 |

5 1/4 Brand Discs

| | 6.40 | 12.10 | 28.30 | 51.70 |
|--------------|-------|-------|-------|--------|
| SS/DD | | | | |
| DS/40T | 7.50 | 14.15 | 33.15 | 61.30 |
| DS/80T | 8.50 | 15.95 | 36.25 | 71.25 |
| DS/HDPC AT's | 14.90 | 28.60 | 68.25 | 130.50 |
| REVERSIBLE | 9.75 | 18.50 | 43.85 | 81.50 |

All discs supplied are with labels 5 1/4" write protects, envelopes & hub rings. 100% certified error free lifetime guarantee.

3 1/2 Brand Discs

| | 13.70 | 26.90 | 64.40 | 122.60 |
|-----------|-------|-------|--------|--------|
| SS/DD | | | | |
| DS/DD | 14.90 | 28.60 | 68.20 | 130.50 |
| DS/HD 2MB | 37.95 | 72.40 | 172.40 | 319.60 |

Printer Ribbons

| Price each Ribbon | 2 | 6 | 12 |
|----------------------------|------|------|------|
| Acorn Ink Jet | 3.75 | 3.45 | 3.15 |
| Acorn AP100 | 2.85 | 2.65 | 2.45 |
| Centronics GLP | 3.65 | 3.45 | 3.15 |
| R. BL GR BR Y | 4.65 | 4.40 | 4.00 |
| Canon 1080/1156 | 2.99 | 2.85 | 2.66 |
| R. BL GR BR Y | 3.99 | 3.85 | 3.70 |
| Citizen 120D | 4.30 | 3.95 | 3.70 |
| Epson MX, FX, RV80, FX800, | | | |
| R. BL GR BR Y | 4.35 | 4.20 | 4.05 |
| MX100/FX1000/FX105 | 5.40 | 5.00 | 4.60 |
| R. BL BR | 4.95 | 4.70 | 4.50 |
| Epson LX80/86 GX 80 | | | |
| R. BL GR BR Y | 3.80 | 3.65 | 3.40 |
| Epson EX800 | 5.50 | 5.10 | 4.70 |
| Juki 6100MS | 2.85 | 2.70 | 2.60 |
| Kaga KP810/910 | 2.99 | 2.85 | 2.60 |
| R. BL GR BR Y | 3.99 | 3.85 | 3.70 |
| Panasonic KXP | 4.65 | 4.40 | 4.20 |
| R. BL GR BR Y | 6.50 | 6.20 | 5.85 |
| Shinwa CP80MS | 4.10 | 3.85 | 3.55 |
| Star LC10 | 3.50 | 3.10 | 2.85 |
| NEC P220 | 5.95 | 5.65 | 5.30 |

Please mix colours and types for best prices.
R = Red, BL = Blue, GR = Green, BR = Brown,
Y = Yellow
If the ribbon you require is not listed
please let us quote.

Space Saver



Computer Paper

| Plain fanfold, micro perf edges | Weight | 1000's | Price per box |
|---------------------------------|--------|---------|-------------------|
| Size | gsm | per box | 1 box 3 bxs 5 bxs |
| 11 x 9 1/2 | 60 | 2000 | 14.50 13.90 13.25 |
| 11 x 9 1/2 | 70 | 2000 | 17.60 15.30 14.45 |
| 11 x 9 1/2 | 80 | 2000 | 19.75 18.10 16.05 |
| EXACT A4 | | | |
| 11 1/2 x 9 1/4 | 70 | 2000 | 20.50 19.25 17.99 |
| | 80 | 2000 | 23.95 22.50 19.65 |
| | 90 | 1000 | 13.90 12.85 12.30 |

Computer Labels

| Continuous fanfold, sprocket fed | Price per 1000 | 1000 | 3000 | 5000 |
|----------------------------------|----------------|------|------|------|
| 70 x 36 2 1/4 x 1 1/2 | | 4.85 | 3.85 | 3.55 |
| 89 x 36 3 1/2 x 1 1/2 | | 5.35 | 4.50 | 4.10 |
| 89 x 49 3 1/2 x 1 1/2 | | 7.50 | 6.60 | 5.90 |

Please state no of labels across sheet (1, 2 or 3)

Disc Storage Boxes

| Price each | 1+ | 3+ | 6+ |
|-------------------|-------|------|------|
| MD120 5 1/4 x 120 | 10.70 | 9.65 | 8.95 |
| MD100 5 1/4 x 100 | 8.90 | 7.99 | 7.40 |
| MD50 5 1/4 x 50 | 6.75 | 6.10 | 5.65 |

Printer Stands

| Space Saver 80 col | 28.50 | 27.25 | 25.30 |
|--------------------|-------|-------|-------|
| 132 col | 35.50 | 32.90 | 31.25 |
| Coated Wire 80 col | 13.70 | 12.75 | 11.85 |
| 132 col | 15.70 | 14.60 | 13.60 |

Swivel Bases

| Price each | 12" | 14" |
|----------------------|-------|-------|
| 12" 55 x 280 x 260mm | 11.90 | 10.40 |
| 14" 55 x 355 x 320mm | 13.50 | 11.80 |



adjusts by front dial turn 360°
Tilt up & down 25°

Freepost, Dept. AU, Rydal Mount, Baker St., Potters Bar, Herts. EN6 3BR



(5 lines)
Access & Visa



0707 52698

Out of Office Hours (Answer Machine)

Orders despatched 24 hrs

Please allow 5 days for delivery
For guaranteed next day delivery please ring
From £2.50 extra.

Postage covers UK only.

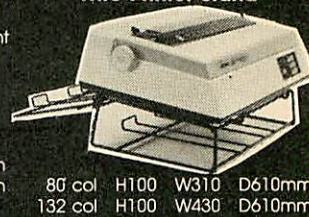
ALL PRICES INCLUSIVE OF DELIVERY
AND VAT

Personal callers welcome
Weekdays 8.30am - 5.30pm
Saturdays 9.30am - 1.00pm

Autumn catalogue out now - 12 pages

Please ring or write for your free copy.

Wire Printer Stand



80 col H100 W310 D610mm
132 col H100 W430 D610mm

MICRO MEDIA - MICRO MEDIA - MICRO MEDIA - MICRO MEDIA - MICRO MEDIA - MICRO MEDIA -

Archimedes Games

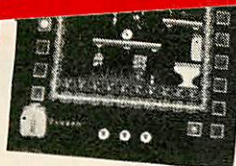


ORION

Skillfully manipulate Orion, the latest air to air combat interceptor, to defend your planet against the tide of marauding aliens. Shoot them down before its too late! Score points by saving your men before they are changed into mutants - otherwise they will turn against you. Contains Baiters, Pods which explode into Swarms and waves of Bombers. Orion is a fast and furious scrolling 'shoot em up' game based on the all time arcade classic.

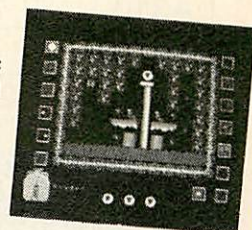


NEW



HOVERBOD

Hoverbod is a traditional maze adventure in the style of the classic Manic Miner, yet it is of stupendous proportions. Hoverbod, the yellow sperical droid, has been banished from the planet Zingle and goes in search of some stolen treasure. The player must guide him through the perils which befall him and help him puzzle his way through the eight different levels to the final quest level. But beware ... the Ibbles and Squibbles start to materialise !!!!



FREDDY'S FOLLY

An enchanting game using animated graphics. Just watch the little men load the canon and pull it along. Notice the celebration when they win! Colourful fun for all the family. Sir Freddy is sneaky and envious of your castle so plans to bomb it with a fleet of balloons. You built a battlement to shoot down Sir Freddy in his balloon. Sir Freddy then hired several Gun ships to shoot your canon crew. Defend your castle and shoot down the balloons and the invading ships.

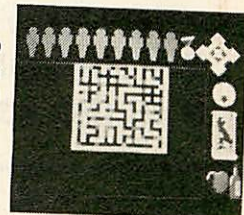


NEW



MINOTAUR

The Minotaur maze game is aimed at a market for children or adults who want a game where quick shoot-out reactions are not necessary. Theseus walks around the Labyrinth, collecting items to assist in the search of the ill fated men which have been provided as food for the Minotaur. The ultimate aim is then to kill the Minotaur and lead the men out of the Labyrinth to safety. The maze size is fully definable by the User. Games may be saved and reloaded for use at a later time.



MISSILE CONTROL

Missile Control is a classic arcade game written for the Archimedes to make full use of the advanced graphics and sound, while remaining faithful to the original concepts of the game. The Player is in control of the missile launches and must do the utmost to protect the cities from the incoming missiles. On each subsequent attack further planes, satellites or 'smart' missiles attack the target cities.



NEW RELEASE — JET FIGHTER
NOW AVAILABLE



MINERVA
SOFTWARE

69 SIDWELL STREET · EXETER EX4 6PH · TELEPHONE EXETER 0392 437756

Please send me: ORION ☐ HOVERBOD ☐ FREDDY'S FOLLY ☐
MINOTAUR ☐ MISSILE CONTROL ☐
Cheque / Access / Barclaycard
No. Name Address
Signed

DISCOUNT!

ARCHIMEDES

★ ESTABLISHED SUPPLIERS ★

| | ENTRY SYSTEM | MONO SYSTEM | COLOUR SYSTEM |
|-------|-----------------|----------------|------------------|
| A305 | 629.00 | 679.00 | 804.00 |
| A310 | 729.00 | 784.00 | 909.00 |
| A310M | 784.00 | 834.00 | 959.00 |
| A440 | 2119.00 | 2174.00 | 2299.00 |

PRINTERS

| | |
|-------------------|-------------|
| STAR LC10 | £175 |
| STAR LC10 COLOUR | £214 |
| STAR LC24-10 | £269 |
| CITIZEN 120D | £119 |
| NEC P2200 | £269 |
| PANASONIC KXP1081 | £139 |

MONITORS

| | |
|------------------|-------------|
| NEC MULTISYNC II | £449 |
| PHILIPS 8833 | £219 |
| PHILIPS 8852 | £249 |



01-650 9152

Phone for other prices

**Please add £6 delivery charge
+ 15% VAT to all orders**

To: VMS Enterprises Ltd, Unit 1, Bouverie Lodge, 4
Rectory Road, Beckenham, Kent BR3 1TU

I wish to order _____

I enclose cheque/PO for £ _____ inc VAT

or charge my Access/Visa No: _____ Exp date: _____

Name _____

Signature _____

Address _____

Postcode _____ Tel No: _____



OVERSEAS MEDIA DISTRIBUTORS

CREDIT CARD HOTLINE (0533) 340114 (24 HOURS)

COMPUTER SUPPLIES AT WHOLESALE PRICES
PRICES FULLY INCLUSIVE OF VAT & DELIVERY (UK ONLY)

TOP BRAND DISKS

3" Amsoft CF2 **£23.90**

| BRAND | DSDD | 3 1/2" DSHD PS/2 | DSDD 48 TPI | 5 1/4" DSQD 96 TPI | DSHD AT DISKS |
|----------|---------------|------------------|---------------|--------------------|---------------|
| SONY | £17.90 | £39.90 | — | — | — |
| DATALIFE | £16.90 | £37.50 | £ 8.90 | £14.50 | £19.50 |
| DYSAN | £18.90 | £45.00 | £10.90 | £15.50 | £16.50 |
| 3M | £18.90 | £45.00 | £ 8.90 | £14.50 | £19.50 |

Prices per box of 10 disks

BULK DISKS Certified & Guaranteed

| | 25 | 50 | 100 | 200 |
|-----------------|---------------|---------------|---------------|---------------|
| 5 1/4" DSDD 40T | £9.90 | £18.90 | £31.90 | £59.90 |
| 5 1/4" DSDD 80T | £10.90 | £20.90 | £36.80 | £68.90 |

Supplied with Envelopes, Labels & Write Protects

| | 10 | 25 | 50 | 100 |
|------------------|---------------|---------------|---------------|---------------|
| 3 1/2" DSDD 135T | £10.90 | £24.50 | £47.50 | £89.00 |

Supplied with Labels

DISK STORAGE BOXES

DISK AND BOX OFFER

| Type | Capacity | Price | With | 48T | 96T |
|--------|----------|--------------|-----------|---------------|-------------------|
| 5 1/4" | 50 | £5.90 | 50 Disks | £21.90 | £28.90 |
| 5 1/4" | 100 | £6.90 | 100 Disks | £31.50 | £39.50 |
| 5 1/4" | 140 | £9.90 | 100 Disks | £35.50 | £42.50 |
| 3 1/2" | 50 | £5.90 | 25 Disks | £29.50 | 50 £51.50 |
| 3 1/2" | 80 | £6.90 | 50 Disks | £52.50 | 100 £92.50 |

All Storage Boxes are with Lock and come with 2 Keys

PRINTER RIBBONS

| | | | |
|-----------------------|--------------|--------------------|--------------|
| Amstrad 8256/8512 | £3.95 | NEC P2200 | £3.90 |
| Amstrad DMP 2000/3000 | £2.75 | Panasonic KXP 1081 | £3.90 |
| Citizen 120D | £4.25 | Star NL10 | £3.90 |
| Epson FX/MX 80/FX 800 | £2.90 | Star LC10 | £3.90 |
| Epson LX 80/86 | £2.40 | Shinwa CP 80 | £3.75 |

Most other makes of Ribbon available, phone for details.

HEAD CLEANING KITS

PRINTER CABLES

| | | |
|---------------------|---------------------|------------------------------------|
| 5 1/4" £2.50 | 3 1/2" £3.75 | IBM, RS232 Centronics £8.50 |
|---------------------|---------------------|------------------------------------|

COMPUTER PAPER

COMPUTER LABELS

| | | |
|--------------------------------|---------------|-------------------------------|
| PLAIN FANFOLD PERF. EDGES | | SELF ADHESIVE, CONTINUOUS |
| 11 x 9 1/2" 60 gsm 1000 | £ 9.50 | PACKED 2000 1, 2 or 3 across |
| 11 x 9 1/2" 60 gsm 2000 | £14.50 | 3 1/2 x 1 1/16" £ 9.50 |
| A4 11 3/8 x 9 1/4" 85 gsm 1000 | £13.90 | 4 x 1 7/16" £10.50 |

PRINTER STANDS

MOBILE PRINTER STAND

| | |
|-------------------|---------------|
| K/D Printer Stand | |
| 80 Column | £24.90 |
| 132 Column | £29.90 |

| | |
|--|---|
| | Rugged steel frame. |
| | Height adjustable basket for output paper & base shelf for input paper. |
| | Self assembly — includes castors. |
| | 80 column £57.50 |
| | 132 column £74.50 |

COPY HOLDERS

| | |
|--|--------------------------|
| | With adjustable arm |
| | 80 Column £14.50 |
| | 132 Column £19.50 |
| | Desk Top £8.90 |

DATA SWITCHES

| | |
|----------------------------------|--------------------------|
| Available in RS232 or Centronics | |
| 2-Way £24.50 | 4-Way £39.50 |
| 3-Way £32.50 | Cross Over £45.00 |

OVERSEAS MEDIA DISTRIBUTORS

30 GREAT MEADOW ROAD, BEAUMONT LEYS
LEICESTER LE4 0QA. TEL: 0533 340114



EDUCATIONAL, GOVERNMENT AND PLC ORDERS ACCEPTED. TRADE AND EXPORT ENQUIRIES WELCOME

REVIEWS

H A R D W A R E

CAPTURED IN COLOUR

Rob Wilmott sees both good and bad in the production version of a video digitiser for the Arc

A digitiser takes a 'TV-style' video signal and allows you to store it in the memory of your computer, or display it on screen. An Archimedes video digitiser was probably the first add-on expansion podule ever demonstrated for the Arc — it was first seen at the *Acorn User* show in 1987, when the Arc made its debut.

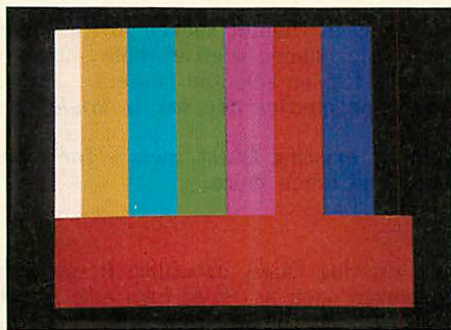
The production version is now available for £287, from Watford Electronics. It is a single-width card which slots directly into the rear of an A440; 300-series machines need a backplane fitted before you can add any podules. The printed circuit board is competently designed, but the soldering is not that neat and some of the components are of low quality (particularly the capacitors).

This cheeseparing is also shown in the use of a BNC connector attached to the board by a loop of wire — a board-mounted socket would have been better. The rear metal bracket lacks the usual Acorn-inspired T-piece, but is a simpler and cheaper arrangement that does the job admirably. The board fits in and runs without problems when combined with all of the other cards tried (including hard discs, sound samplers, Acorn I/O podules and ROM boards).

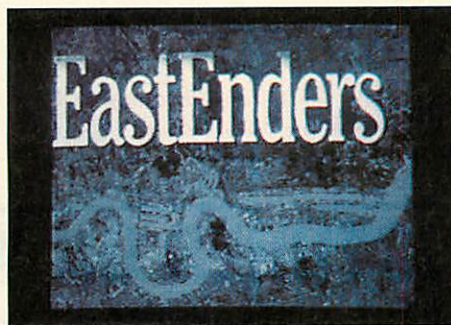
The manual is remarkably lucid and excellently produced — it is easy to understand the software side of things.

Installing the card is simple, as it connects up to a video source like a video camera or a TV tuner. There's no bother with software — it's all stored in ROM on the card itself and downloaded into the Arc automatically. And there's a nice selection of demonstration routines, which give you an idea of what the digitiser and its software are capable of.

It shows you can grab still images from video; grab individual frames from moving pictures either when a key is pressed or continuously, and manipulate the images on screen in a variety of entertaining ways. A simple *SEE command allows you to see whatever video you feed into the digitiser on screen. So



Simple test with saturated colours



Slight tone changes: a more demanding test



Colour picture, digitised in three passes

you can grab an image, scale, rotate and distort it and even fill areas on the screen with the picture — the software can scale the image to fit in any space on the screen. There are a number of SWI calls provided so you can use these effects in your own programs: well-written demonstration programs show you how.

On test, the unit proved able to digitise pictures from almost any video source, from videocassette players (in particular those with a video out-socket and a mono switch), laserdisc players such as the Domesday system, cheap

black and white video surveillance cameras through to professional broadcast-quality cameras and test equipment.

The screenshot of the coloured bars shows some of the quality of the hardware, but is a simple test because the colours are all full-strength (saturated) colours: the test equipment fed the digitiser with pure red, green and blue signals. The digitiser performs extremely well in this area.

A more demanding test involves a picture with gradations of tone, and lots of slight colour changes. The toning function of the software does a reasonable job of getting the picture to look good, but this does show up a lack of 'bit resolution' — there are 64 colour levels, a good number for most applications (compare the 64 levels with eight on a typical BBC eight-bit digitiser). But it's not quite enough for tones to blend smoothly: greys tend to jump from one value to another abruptly.

Part of the problem here is the display: on an Arc you can only display 16 shades of grey, rather than the 64 necessary. You really need a composite video input to your monitor to show this digitiser at its best. Almost all mono monitors have composite inputs, but the standard Arc colour monitor has its composite circuitry removed; the similar Philips 8533 model retains it. All the pictures grabbed by the digitiser are essentially monochrome, though as well as grey, 'pseudo-colours' may be used on screen to display them.

The software allows you to grab video images in any mode, even the multisync modes of a 440. The highest resolution is 512 by 512 pixels, or 512 by 256 in a normal mode. The number of shades displayed depends on the number of colours available in the current mode. In two or four colour modes, dithered patterns of dots are used to represent the grey shades. And in mode 12 (16 shades), you can take a digitised picture and turn it into a sprite. Pictures can be used in your own programs with *SCREEN-

ARCHIMEDES QUEST

A New Advanced Information Handling Package

WHAT IS ARCHIMEDES QUEST?

A fast and powerful new version of our very popular Quest data handling package. It has been substantially re-written to run in the Archimedes native 32-bit environment.

WHAT ADVANTAGES DOES ARCHIMEDES QUEST HAVE OVER OTHER VERSIONS?

Very large datafiles - well over 3Mb of data in RAM on an A440, yet Archimedes Quest works equally well on an A305.

Very fast - 7 seconds to count every reference to Hamlet spoken in the first act of the play.

Graphics and statistics built in - bar charts, pie charts, scattergraphs, histograms, percentages and more in full colour. Created quickly and easily on a whole file or selected subsets.

Improved command language - search files using queries like *sex is "male"* or *name starts "Eli"* as well as all the commands from previous versions.

Numerous other improvements as suggested by existing Quest users - for example extra fields can be added, fields can be deleted, serial fields can be created and much more.

CAN I USE DATA FROM OTHER PACKAGES?

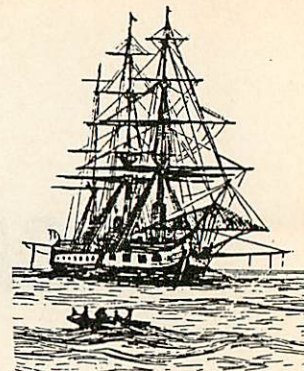
Archimedes Quest is fully compatible with existing Quest datafiles. It can import and export data in both CSV and TSV formats allowing interchange with packages such as *Pipedream* and *1st Word Plus*. It also supports the File Interchange Format allowing data to be transferred to and from other machines such as the RM Nimbus.

WHEN WILL ARCHIMEDES QUEST BE AVAILABLE?

Archimedes Quest is available now for only £30. To order Archimedes Quest or for details of any of our products contact:



Advisory Unit for Microtechnology in Education
Endymion Road, Hatfield, Herts AL10 8AU Tel: 07072 65443



SATELLITE PICTURES ON YOUR BEEB!



With one of our high performance weather satellite receiving stations you can receive and display up-to-the-minute weather satellite pictures from American, European, or Russian satellites! The systems are suitable for BBC models B, B+ & Master

WXSAT

STANDARD RESOLUTION WEATHER SATELLITE STATION

A complete hardware and software package comprising MSA20 aerial, MSR20 receiver, and MSS20 decoder/interface with WXSAT software package. In a recent review by Radio & Electronics World Magazine they concluded "... have reviewed four different weather satellite receiving stations in the past two years, varying in price from £400 to around £800, but this one must surely beat the lot."

£182.04 + VAT

NEW

MSG20 GRAPHSTORE

HIGH RESOLUTION FRAMESTORE/GRAPHICS PROCESSOR

A high resolution (512 pixel x 512 line x 128 greyscale) digital framestore/graphics processor of unparalleled performance. Coupled to the BBC Micro and MSR20, satellite receiver is capable of viewing weather satellite pictures as never before. Powerful features include zooming, scrolling, film mode, text overlay, picture enhancements.

Complete with software package £347.75 + VAT

Complete weather station £767.30 + VAT

| PRICE LIST | | |
|-----------------------|--------|------------|
| | NET | CARR & INS |
| MSR20 Receiver | 132.65 | 6.00 |
| MSA20 X-Dipole Aerial | 26.75 | 5.00 |
| WXSAT Basic Station | 234.35 | 7.20 |
| MSS20 Interface | 74.95 | 1.50 |
| MSG20 Graphstore | 347.75 | 6.00 |
| MSD20 Dish Aerial | 121.50 | 18.00 |
| MSC20 Down Converter | 138.65 | 1.50 |

ADD 15% VAT TO ALL ORDERS

STOP PRESS: Archimedes System now available demo disk £5

PHONE OR WRITE
FOR FULL INFO
PACK AND PRICES

marTElec

Remote Sensing



108 Queen's Road, Farnborough, Hants GU14 6JR Tel. (0252) 515666 Telex: 859489 (MARTLC G)

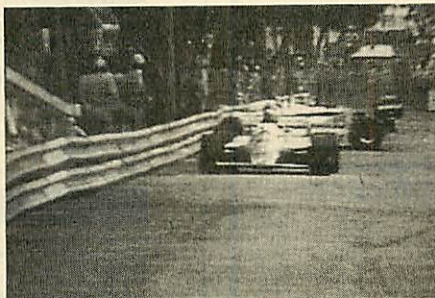
REVIEWS

H A R D W A R E

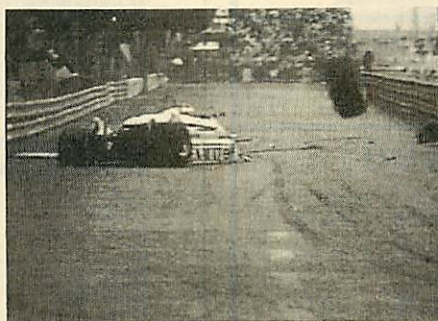
LOAD, or as sprites. The BBC *Volcanoes* interactive video disc used hand-drawn diagrams, digitised then tidied up in *Artisan*, then recorded on the laserdisc.

There is a built-in screen dump that prints out the digitised pictures on 8 or 24-pin printers. You can vary the final size of dump, even printing it as a mosaic on several sheets of paper. And there's a dot-pattern editor included so the grey tones used by the dump can be altered.

The most impressive feature for people used to previous Beeb digitisers is that it can grab pictures in 'real time'. That is, a single frame of moving video can be digitised, then transferred into the memory of the micro, before the next frame is received a twenty-fifth of a second later. In fact this isn't quite true, as in higher resolution screen modes, only every second or third frame is grabbed (because it takes too long to transfer to the Arc's main memory). But it is possible to watch *EastEnders* using the digitiser and a TV tuner. And you can apply effects



Captured – a single frame of moving video ...



... and again a twenty-fifth of a second later. In fact, in higher resolution screen modes, only every second or third frame is grabbed.

such as moving the picture around the monitor screen at the same time.

One of the utility programs on disc allows you to capture colour pictures even with a simple mono camera: you need three colour filters to grab the red, green and blue components of a scene one at a time, and the mouse-driven utility combines the three images into one colour picture.

The podule software also contains a couple of image-processing commands. One smooths the image and removes spurious noise by averaging every pixel with its neighbours, but reduces the detail. The other is a median filter that tries to remove some noise from the image by altering only pixels that seem wildly different from their neighbours.

The Watford digitiser is simple to use, some of the software is impressive, and it is possible to put the pictures it grabs to good effect. It looks expensive, considering the overall construction quality, but still offers reasonable value for money.

Archimedes Shareware Discs

These discs consist of programs sent in by subscribers to the Archive Magazine (also published by Norwich Computer Services).

Also Available...

Graphics Demo 1 (£3.50)

49 graphics demo programs plus "MenuMaster" – a program to allow you to edit the demo order and add your own demos.

Shareware Disc N° 1 (£3.50)

MenuMaster with 7 more graphics demo programs plus Life, Mandelbrots, European Geography, Structured Directory Lister.

Shareware Disc N° 2 (£4.50)

DFS reader, backup and archiver. Nine more graphics demos, Connect Four, Mastermind, Solitaire and Star Trek games, 256 colour Sprite Editor, CMOS ram Editor, Disc Editor, LQ printer Font Definer, Matrix Functions, Memory Mappings & Vector Listings, BASIC Fast Screenload.

WIMP Template Editor (£8)

Design your own windows, icons, menus and sprites – completely freehand in a WYSIWYG format. Create WIMP templates which can easily be loaded from your own program – no need for endless data blocks!!!!

Based on the original "Form Editor" program from Acorn Computers, modified and extended (with Acorn's permission!).

Save £1.50 – Buy all three for just £10.

Norwich Computer Services, 18 Mile End Road, Norwich, NR4 7QY. (0603-507057)

EPROMS, 8271

| | Exc VAT | Inc VAT |
|-----------------------|---------|---------|
| 1-9 27128 250nS 21V | 4.30 | 4.95 |
| 10+ 27128 250nS 21V | 3.87 | 4.45 |
| 1-9 27128 250nS 12.5V | 3.22 | 3.70 |
| 10+ 27128 250nS 12.5V | 2.91 | 3.35 |
| 1-9 2764 250nS | 2.60 | 2.99 |
| 1-9 2756 250nS | 4.22 | 4.85 |
| 1-9 2756 250nS | 3.83 | 4.40 |
| 1-9 TTL Cmos set | 3.91 | 4.50 |
| 1-9 8271 controller | 39.13 | 45.00 |
| 1-9 6264 LP 150nS | 8.99 | 9.20 |
| Acorn 8271 DFS | 45.22 | 52.00 |
| Acorn 1770 DFS | 45.22 | 52.00 |

ROMS

| | Exc VAT | Inc VAT |
|-------------------|---------|---------|
| Inter-Word | 35.65 | 41.00 |
| Inter-Sheet | 35.65 | 41.00 |
| Inter-Base | 46.96 | 54.00 |
| Wordwise Plus | 37.39 | 43.00 |
| MEGA 3 | 71.30 | 82.00 |
| Spell Master | 40.00 | 46.00 |
| View Spell | 26.00 | 29.90 |
| View Plot Disc | 19.13 | 22.00 |
| ViewSheet | 36.52 | 42.00 |
| View Store | 36.52 | 42.00 |
| Overview I & II | 68.70 | 79.00 |
| View Professional | 62.61 | 72.00 |

DISKETTES 100% error free (lifetime warranty)

| | Exc VAT | Inc VAT |
|----------------------------|---------|---------|
| 10 Banana Reversible disks | 8.65 | 9.95 |
| 10 3.5 D S Ipi | 8.61 | 9.90 |
| 10 96dpi D S D + case | 5.17 | 5.95 |
| 10 96dpi D S D in box | 5.17 | 5.95 |
| 50 96dpi D S D in boxes | 17.17 | 19.75 |
| 100 96dpi D S D in boxes | 32.09 | 36.90 |
| 40 Disc Box 3.5" - lock | 5.17 | 5.95 |
| 50 Disc Box hinge lock | 5.65 | 6.50 |
| 100 Disc Box hinge lock | 6.52 | 7.50 |
| Black Library case | 1.21 | 1.39 |

5 1/4 DISC DRIVES

| | Exc VAT | Inc VAT |
|---------------------|---------|---------|
| Cumana CSX100 | 90.43 | 104.00 |
| Cumana CSX400 | 117.39 | 135.00 |
| Cumana CD800S | 252.17 | 290.00 |
| MD400A 400K No PSU | 85.22 | 98.00 |
| MD400B 400K + PSU | 100.87 | 116.00 |
| MD800C 800K No PSU | 173.04 | 199.00 |
| MD800E 800K + PSU | 190.43 | 219.00 |
| MD800D 800K - Stand | 204.35 | 235.00 |

Phone for Viglen & Torch Winchester

MONITORS

| | Exc VAT | Inc VAT |
|---------------------------|---------|---------|
| IPhilips CM8852 | 251.30 | 269.00 |
| IPhilips BM7502 Green | 65.22 | 75.00 |
| IPhilips BM Stand | 7.78 | 8.95 |
| IPhilips TV Tuner | 60.00 | 69.00 |
| Taxan KX P31 Green | 68.70 | 79.00 |
| Taxan KX1201 Green (p 39) | 68.70 | 79.00 |
| Taxan KX Amber | 82.61 | 95.00 |
| IMicrovitec 1451 | 221.74 | 255.00 |
| IMicrovitec 1451 Ap | 260.00 | 299.00 |

(Prices inc. BBC Cable)

MASTER/ARCH

| | Exc VAT | Inc VAT |
|------------------------------|---------|---------|
| Master 128K Micro | 365.22 | 420.00 |
| Archimedes 305 from | 699.00 | 803.35 |
| 512 Co-processor | 90.00 | 103.50 |
| Turbo Upgrade | 98.78 | 113.50 |
| Acorn Cartridges | 10.87 | 12.50 |
| Care Cartridges from | 8.65 | 9.95 |
| View 3 View Sheet guides | 9.00 | 9.00 |
| Reference Manuals | 14.00 | 14.00 |
| Master & BBC Dust Covers | 3.00 | 3.45 |
| Second user BBC BS available | | |

Phone for details

VOLTAIRE JOYSTICKS

| | Exc VAT | Inc VAT |
|------------------|---------|---------|
| Delta 14B single | 11.26 | 12.95 |
| Delta 3B single | 9.52 | 10.95 |
| Delta 3B twin | 15.61 | 17.95 |

PHILIPS CM8833

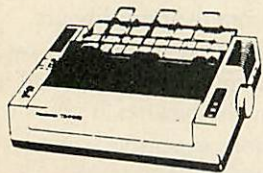
with BBC cable

£239.00 (£207.83 + VAT)

PANASONIC KXP 1081

with BBC cable & paper
£159.00 (£138.26 + VAT)

with Screen Dump 2m cable and paper
£165.00 (£143.48 + VAT)



| | Exc VAT | Inc VAT |
|------------------------------|---------|---------|
| KXP 1080 Fabric ink ribbon | 4.26 | 4.90 |
| KXP 1080 View Printer driver | 7.83 | 9.00 |
| KXP 1080 Control Dump rom | 13.00 | 14.95 |

PANASONIC KXP1082

(as 1081 but 160cps)

with BBC cable & paper
£189.00 (£164.35 + VAT)

KAGA/TAXAN KP815

with BBC cable & paper

£175.00 (£152.17 + VAT)

CITIZEN 120D

with BBC cable & paper
£135.00 (£117.39 + VAT)

CANON PW1080A

with BBC cable & paper

£159.00 (£138.26 + VAT)

STAR LC10

with BBC cable & paper
£205.00 (£178.26 + VAT)

EPSON LX800

with BBC cable & paper

£219.00 (£190.43 + VAT)

STAR LC10 COLOUR

with BBC cable & paper
£259.00 (£225.22 + VAT)

EPSON LQ500

with BBC cable & paper

£325.00 (£282.61 + VAT)

STAR LC2410

with BBC cable & paper
£335.00 (£219.30 + VAT)

EPSON FX800

with BBC cable & paper

£339.00 (£294.78 + VAT)

Kaga/Taxan KP915

with BBC cable & paper
£315.00 (£273.91 + VAT)

PRINTERS/CABLES/ETC.

| | Exc VAT | Inc VAT |
|-------------------------|---------|---------|
| Epson LQ850 | 465.22 | 535.00 |
| Epson FX1050 | 462.09 | 490.00 |
| 1.5m (4 foot) BBC Cable | 260.00 | 299.00 |
| 2.0m (6 foot) | 4.00 | 4.60 |
| Compact printer cable | 6.00 | 6.90 |
| IBM Archimedes cable | 6.00 | 6.90 |
| LX800 Sheet Feeder | 62.61 | 72.00 |
| LC10 Sheet Feeder | 55.52 | 65.00 |
| NL10 Sheet Feeder | 47.83 | 55.00 |
| 2 way printer switch | 20.00 | 23.00 |
| Printer Dust Covers | 4.00 | 4.60 |

PRINTER RIBBONS

| | Exc VAT | Inc VAT |
|------------------------|---------|---------|
| LX FX 800 Print Ribbon | 3.00 | 3.45 |
| LX-80 Print Ribbon | 3.00 | 3.45 |
| NL-10 Print Ribbon | 4.80 | 5.52 |
| LC-10 Print Ribbon | 4.00 | 4.60 |
| 120D Print Ribbon | 4.00 | 4.60 |
| KP PW Print Ribbon | 3.39 | 3.90 |
| Juki 6100 Print Ribbon | 1.30 | 1.50 |

Phone for quantity discounts

Phone for our best price before placing your order

EDUCATIONAL & GOVERNMENT ORDERS WELCOME

All products have a 12 month no quibble guarantee

Prices subject to variation without prior notification

We are closed some Saturday afternoons

Carriage 92p (80p + VAT) Securicor £6.90 (£6.00 + VAT)

WeServe

Larger items
delivered
by Securicor



Acorn Dept.
128 West Street,
Portchester,
Hants.
PO16 9XE.
Tel: 0705 325354

p&h micros

CHINEHAM SHOPPING CENTRE

BASINGSTOKE, HAMPSHIRE

TEL: 0256-28588 - 24 HR

ON A33 Reading Road.

22-24 GUILDFORD ROAD

BAGSHOT, SURREY

TEL: 0276-73078 - 24 HR

3 mins Jct 3 M3

VAT INC

Archimedes

| | | | |
|---------------------------|----------|-----------------------------|---------|
| A305 No Monitor | £753.25 | 0.5 Mbyte RAM for 305 | £155.00 |
| A305 Mono Monitor | £828.00 | Floppy Disc | £135.00 |
| A305 Colour Monitor | £1000.50 | 20 Mbyte Hard Disc + Podule | £535.00 |
| A310 No Monitor | £914.25 | Podule Back Plane | £42.00 |
| A310 Mono Monitor | £977.50 | ROM Podule | £64.00 |
| A310 Colour Monitor | £1150.00 | I/O Podule | £92.00 |
| A310M No Monitor + MS-DOS | £377.50 | Mid add-on to IO | £42.00 |
| A310M Mono + MS-DOS | £1035.00 | Mid Expansion | £75.00 |
| A310M Colour + MS-DOS | £1219.00 | Arch Ref Manual | £29.00 |
| A410 No Monitor | £1499.00 | PC Emulator | £106.00 |
| A410 Mono Monitor | £1560.00 | MASTER SERIES | |
| A410 Colour Monitor | £1725.00 | Master 128 | £425.00 |
| A440 No Monitor | £2750.00 | Master Turbo Module | £115.00 |
| A440 Mono Monitor | £2829.00 | Master 512 Module | £215.00 |
| A440 Colour Monitor | £3013.00 | Master Erom Cartridge | £14.00 |
| ARCH-PODULES/UPGRADES | | Master Manual 1 or 2 | £14.95 |

CUMANA DISC DRIVES

| | |
|--|---------|
| 5.25" DRIVES WITH PSU | |
| CS400S 400K 40/80T Switchable | £145.00 |
| CD800S 800K Dual 40/80T Switchable | £270.00 |
| 5.25" DRIVES WITHOUT PSU | |
| CSX400S 400K 40/80T Switchable | £125.00 |
| CDX800S 800K Dual 40/80T Switchable | £245.00 |
| 3.5" DRIVES WITH PSU | |
| CS354 720K 80T Double sided | £120.00 |
| CS358 1.4MB Dual 80T DS | £200.00 |
| 3.5" DRIVES WITHOUT PSU | |
| CSX354 720K 80T Double Sided | £105.00 |
| 5.25" - 3.5" COMBINED DRIVES | |
| CCD200 80T DS 3.5/5.25" DS40/80 | £250.00 |
| BRIDGE UNITS WITH BUILT-IN DRIVES | |
| CB400 Dual 40T DS in Bridge | £260.00 |
| CB800 Dual 80/40T Switchable in Bridge | £295.00 |
| 5.25" EXTERNAL DRIVE FOR ARCHIMEDES | |
| CA400 400K 80/40T DS Switchable fully buffered interface, cables, mounting kit | £185.00 |

ARCHIMEDES SOFTWARE

| | | | |
|---------------------|---------|----------------------------|---------|
| Anal C | £105.00 | Toolkit | £35.00 |
| Isa Pascal | £105.00 | Flying Start II | £63.00 |
| Fortran 77 | £105.00 | SpellMaster | £50.00 |
| Logistix | £105.00 | InterWord | £40.00 |
| Twin | £30.00 | InterSheet | £40.00 |
| Lisp | £210.00 | InterChart | £26.00 |
| Prolog X | £210.00 | Con Comp Podule | £54.00 |
| PC Emulator | £105.00 | as above + battery | £65.00 |
| ARCH GAMES | | Zarch | £18.00 |
| Kermil | £52.00 | Conquerer | £22.50 |
| First Word Plus | £85.00 | Minolaur | £13.50 |
| Clares Artisan | £35.00 | System Delta Plus (D Base) | £65.00 |
| Clares Image Writer | £26.00 | Beeb to Ark transfer kit | £31.00 |
| Missile Control | £13.50 | Sigma Sheet (Spread Sheet) | £65.00 |
| Hovobed | £13.50 | Personal Accountant | £250.00 |
| | | Auto Sketch (Cad) | £82.00 |

PSION HAND HELD

| | | | |
|---------------------------|---------|----------------------------------|--------|
| Psion Organiser II Mod CM | £90.00 | FREE CARRIAGE ON ALL PSION ITEMS | |
| Psion Organiser II Mod XP | £125.00 | Spelling Checker | £27.50 |
| 8K Datapack | £12.00 | Comms Link PC/XT Plug | £55.00 |
| 16K Datapack | £18.50 | Mains Adaptor | £12.00 |
| 32K Datapack | £32.00 | Organiser Finger/Letter | £32.00 |
| 64K Datapack for XP | £55.00 | Olary Link | £12.00 |
| 128K Datapack for XP | £90.00 | Mini-Formatter | £32.00 |
| 32K Rampack for XP | £50.00 | Complete Guide Book | £9.50 |
| Spreadsheet for XP | £39.00 | Harvester Superchip | £94.00 |
| Comms Link Adpt to BBC | £12.00 | Games Organiser | £33.00 |
| Finance Pack | £27.50 | Hangman Game | £28.00 |
| Maths Pack | £27.50 | Leather carry case | £13.00 |
| | | Filo-fax style carry case | £65.00 |

'NEW BASINGSTOKE SHOP'

OPENING SPECIALS

(AT BOTH SHOPS OR MAIL)

| | |
|-------------------------------|----------|
| Archimedes 310M Colour system | £1170.00 |
| Archimedes 410 Colour System | £1675.00 |
| Archimedes 440 Colour system | £2880.00 |
| Panasonic P1081 Printer | £160.00 |
| Star LC10 Mono Printer | £190.00 |
| Star LC10 Colour Printer | £230.00 |

Z88 LAPTOP SPECIAL £270.00

FREE CARRIAGE ALL Z88 ITEMS

| | | | |
|-----------------|---------|------------------------|---------|
| Mains Adaptor | £9.50 | Carry Case | £19.00 |
| 128K RAM Pack | £47.00 | 32K RAM Pack | £19.00 |
| 128K EPROM Pack | £47.00 | 32K EPROM Pack | £19.00 |
| EPROM Eraser | £38.00 | PC Link II | £34.00 |
| Parallel Cable | £29.00 | Serial Printer Cable | £9.50 |
| BBC Link | £23.50 | Modem | £167.00 |
| 512K RAM Pack | £194.00 | SpellMaster | £55.00 |
| | | Parallel Printer Cable | £29.00 |

BOOKS FOR ARCH/BBC MICRO

| | | | |
|-------------------------------|--------|--------------------------------|--------|
| Forth Manual | £10.00 | 15 hr W.P BBC/Wordwise + | £4.95 |
| BCPL Manual | £15.00 | Advanced Graphics with the BBC | £10.50 |
| Intro to Comal | £10.00 | Advanced BBC user guide | £15.95 |
| Logo Ref Manual | £7.50 | Assembly Lang for the BBC | £9.50 |
| View Store Manual | £10.00 | Master 128 High Flyers | £10.95 |
| Lisp Manual | £10.00 | New Advanced user-guide | |
| Isa Pascal Manual | £10.00 | - Master -B | £11.95 |
| Intro to Logo | £10.00 | 6502 Applications | £19.95 |
| 6502 Dev System Manual | £7.50 | 6502 A55 Lang Prog 2nd Ed | £19.95 |
| View Sheet guide | £10.00 | 6502 Reference guide | £10.95 |
| Arm Assembly Lang prog (Arch) | £12.95 | Programming 6502 | £16.95 |

Prices include VAT at 15%.

Instant Credit up to £1000 for callers only at both shops.

Order by Phone or Letter

Cheques to be made out to:

P&H ELECTRONICS LTD.

CHINEHAM SHOPPING CENTRE

BASINGSTOKE, HANTS

Carriage Costs (including BEPO) Per Item

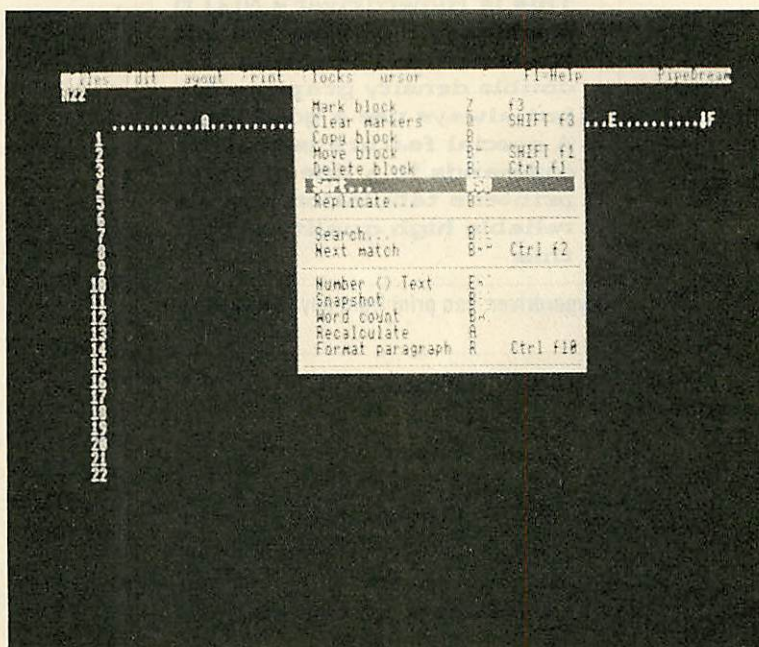
Books, Software, Upgrades, Accessories - Carriage Free UK/BEPO

Disc Drives £6.00 Micros, Monitors, Printers £9.00

OFFERS

PIPEDREAM

*Power to
your fingertips*



Acorn User readers can now buy the brand new *Pipedream SpellChecker* for £49.95 as well as the integrated software packages, *Pipedream* and *View Professional* for only £99 and £65 all inclusive. *View Professional* works on the BBC model B and the Master series while *Pipedream* is available for the Archimedes, the Master 512, the IBM PC and compatibles.

Pipedream features:

- * load/save file, insert file, load/save row selection
- * save column range; load/save spreadsheets formats
- * up to 8192 columns, 536870912 rows
- * sort in ascending/descending order, alphabetically, numerically and chronologically
- * linking files to pass numbers between documents
- * user-defined colour displays
- * foreign character editing and printing
- * copy, move, and delete block * save cursor position, go to old position * redefinable keys; swap case; force page break
- * multi-file documents; print mail shots
- * flexible printer drives, microspacing
- * leading and trailing characters; English/American date formats
- * decimal places, minus/brackets Wysiwyg display
- * Lotus 123 compatability

Pipedream SpellChecker features:

- * 90,000 word dictionary
- * checks 40,000 words a minute
- * user dictionary

* powerful browsing utility and is fully intergrated with *Pipedream*. This new package is destined to become as indispensable as *Pipedream* itself.

'For business reports with a mixture of numbers and text you can't beat it... *Pipedream* is... indispensable.' *Acorn User* October 1988.

Please send me _____ *Pipedream* packs at £99
Please tick: MS-DOS 5.25-inch disc ☐ MS-DOS 3.5-inch disc ☐
Archimedes 3.5-inch disc ☐

_____ *View Professional* packs at £65
_____ *Pipedream SpellChecker* at £49.45

I enclose my cheque payable to **Colton Software Ltd** for £ _____

Please charge my Access/Barclaycard

Acc

Expiry

Name _____

Address _____

Postcode _____

Send this coupon with your remittance to **Pipedream Offer, Acorn User Merchandising, Redwood Publishing Ltd, 20-26 Brunswick Place, London N1 6DJ**

REVIEWS

S O F T W A R E

DRIVEN TO DISTRACTION

Getting your micro to communicate with your printer is not always easy. Robert Elwell examines two utilities that should help



It would be intriguing to know just how many pleas for help with a computer problem really relate to a printer.

Getting our British computer to talk to a (usually) Japanese printer can be difficult. These two ROMs are an attempt to simplify the process, and they allow you to use the whole range of your printer's capabilities with a wordprocessor.

One of these ROMs supports the *View* wordprocessor in particular, while the other is a general purpose printing utility, which can enhance the use of *View*. Although both packages can drive daisywheel printers, their real relevance is in gaining fuller use of a dot-matrix printer. In theory, dot-matrix printers are completely flexible; in practice endless patience and unlimited paper are likely to be needed. Both of these ROMs can help you get the most from your printer.

Watford Electronics' *View* Printer Driver ROM seems initially to be the complete solution to *View* users's frustration. I am a fan of *View*. I persevered with version 1.4 when the only alternative was the original *Wordwise*. Now I use version 3 with a Watford Shadow RAM Card, and I've often cursed the difficulty of getting text printed in the way I've wanted it.

Yet I am not certain whether this ROM is the solution. Part of my dismay comes from the accompanying manual – it's an excellent manual: clear, informative and quite open about the limitations of the ROM software. These limitations stem largely from the nature of *View* itself.

A virtue of *View* is that text to be printed is passed through a printer driver, which interprets highlight codes in the text, and outputs the appropriate control codes to the printer. A different printer with different control codes doesn't mean editing the entire document (as might be required in *Wordwise*); you

HYPERDRIVER PROPORTION
This is Hyperdriver's NLQ combination of Palatino and Wallace Nicoll. Printing is double density graphics for but always use a good quality. A special feature is that Hyperdriver commands in a line of NLQ printer's tabulation and a reliable high quality proportion.

Hyperdriver: can print from any language

| Driver | Printer |
|-----------|---|
| FX80 | Epson FX80/100 |
| FX85 | Epson FX85/105 |
| GLP | Centronics GLP Brother M1009 |
| Facit | Facit 8105 |
| Flowriter | Ricoh Flowriter 1600 |
| HI80 | Epson HI80 |
| HR15 | Brother HR15 |
| JP101 | Acorn/Olivetti JP101 |
| JX80 | Epson JX80 |
| Juki | Juki 6100 |
| Kaga | Kaga/Taxan KP810/910 Canon PW1080/1180 |
| LX80 | Epson LX80 |
| MX80 | Epson MX80/100 |
| NLQ | Watford Epson NLQ ROM |
| RX80 | Epson RX80/100 |

Table 1: *View* Printer Driver ROM

just need the right driver for your new printer. The disadvantage is that the memory available for the driver is limited so it can't be too complex, and there are cumbersome collections of formatting characters visible on the screen. You wouldn't want to get what you see in *View*.

Watford Electronics' solution is characteristically sophisticated. Its ROM contains a range of 15 ready-made drivers for the most common printers, listed in the table. And it also has a driver generator – a program which will produce a driver for any printer providing

you know the control codes it uses. The resulting driver has to be saved to disc. In addition, there is a preview mode that shows what you will get on the screen.

Acornsoft's extended highlight sequences and microspacing are mirrored in the Watford ROM. There's a bonus for anyone still using *View* 1.4: a routine in the ROM will allow you to print from memory, instead of having to save your text to a file, and then printing it.

If this were all there was to the ROM, it could be dismissed immediately as unnecessary expense. *Acorn User* has published several programs to generate drivers, and there's also a driver-generator bundled with *View* 3.0 (drivers for screen, memory and common printers are included).

But Watford's ROM comes into its own in the additional control it can provide over the printer. It offers XDRIV (eXtended DRIVER) facilities, which can give control over characters per inch, lines per inch, and character set selection, as well as a mnemonic way of achieving printing effects – 'NLG' means enlarged text, 'BOLD' means bold. If your printer has a Near Letter Quality mode, you can control this from the text. If you don't have NLQ but you do have Watford's NLQ ROM, your printing can take advantage of the other ROM's presence.

The disadvantage of using XDRIV stems entirely from the inadequacy of *View* itself. When formatting text, *View* quite properly disregards the highlights on a line when counting the line length. But it treats XDRIV mnemonics as text – it counts them as characters. The result is text which is justified neither on screen nor when printed out.

In text which is only going to be printed once, the answer is to type, review and format the text, then add XDRIV codes afterwards. But to amend the text again would be a nightmare. You'd have to remove the codes, edit,

reformat, then add the codes again in order to maintain the justification. It would be fairly unusual to want to use the XDRIV facility in this situation.

The final limitation of the ROM is that for any of its printer drivers to work, the ROM must be in the machine doing the printing. A ROM image on disc won't work. You will not be able to take your text files, with their particular embedded XDRIV codes, to another Beeb with a better printer, unless it too has a similar ROM fitted.

Hyperdriver

The second ROM to be reviewed here, *Hyperdriver*, has the alternative title 'The Ultimate Printer Control System'. This isn't quite accurate, but it is a reasonable attempt. Unlike the Watford ROM, which is protected against piracy, *Hyperdriver* includes a ROM image on disc, as well as help and demonstration files. The difference between this ROM and the Watford one is that the print facilities are available from any language – not just *View* – and even from second processors and different operating systems like DOS Plus or CP/M.

Hyperdriver is far more complex in operation than the Watford ROM, and its 90-page manual is a delight. Not only does it explain the ROM's facilities in great detail, but it also has an illuminating chapter on the vagaries of printers. A technical section reveals which areas of the computer's memory *Hyperdriver* uses for workspace.

On the disc accompanying the *Hyperdriver* ROM are programs to work out what degree of compatibility your printer has with the Epson 'standard', and to demonstrate all the possible effects. Amusingly, you can use this to show not all Epson printers are completely Epson-compatible! There are example files showing the capabilities of the ROM when using *View*, *Wordwise*, *Wordwise Plus* and *InterWord*.

All the facilities of *Hyperdriver* are accessed by star commands. They consist of a two letter mnemonic, so *LF is a line feed, while *LF10 is 10 line feeds. The list of commands is exhaustive, even setting horizontal tabs, vertical tabs, changing colour and disabling the end-of-paper detector are possible from simple star commands. There's also a primitive ROM manager: *Hyperdriver* can pass on commands to any other ROM in your machine.

One disadvantage of *Hyperdriver* is that the less Epson-compatible your printer, the more effort you will have to invest in getting all the features to work. This is because for non-compatible printers, you can define your own command sequences, called macros, which will pass to the printer the control codes you have selected to achieve a particular effect.

So if your printer needs special codes to do bold, you define these as a macro that replaces the original bold command. There can be up to 10 macros, and once defined, they work exactly like the pre-set commands. It is a very simple matter to save, reload, and modify macro lists.

Not only can the ROM produce very strange and wonderful effects like condensed italic subscript, it also serves as its own NLQ ROM: there's a complete and attractive proportionally spaced typeface. Another interesting facility is that it can print the contents of the screen, but using the screen's character definitions. And this of course will include any of your user-defined characters set with VDU 23. A final refinement is 'keyboard recording', which effectively acts as an extra function key.

When using *View*, typing *VD loads *Hyperdriver's* printer driver. All *Hyperdriver's* commands can then be embedded in the text, allowing good flexibility in print out. It is easy to get carried away with the sheer variety of typestyles available. *Highlight 1* starts a command sequence, and *Highlight 2* finishes it. The commands are exactly the same as the star commands.

However, *Hyperdriver* is no better than Watford's ROM in coping with formatted text containing the printer commands. The highlights are ignored, but the instructions between them are treated as ordinary text. Just as with the Watford ROM, it is better to lay out the text first, then add the printing instructions. And if you change things like the number of lines per inch, it is up to you to work out how many there is going to be on the page – otherwise *View* will get the page breaks wrong. Again the effects are only available from a micro equipped with the *Hyperdriver* ROM or the ROM image in sideways RAM.

Both Watford's ROM and *Hyperdriver* are pushing *View* just a little beyond its natural limits. A wordprocessor should improve ease of writing and clarity of presentation. Both ROMs can improve the latter, but at the expense of consider-

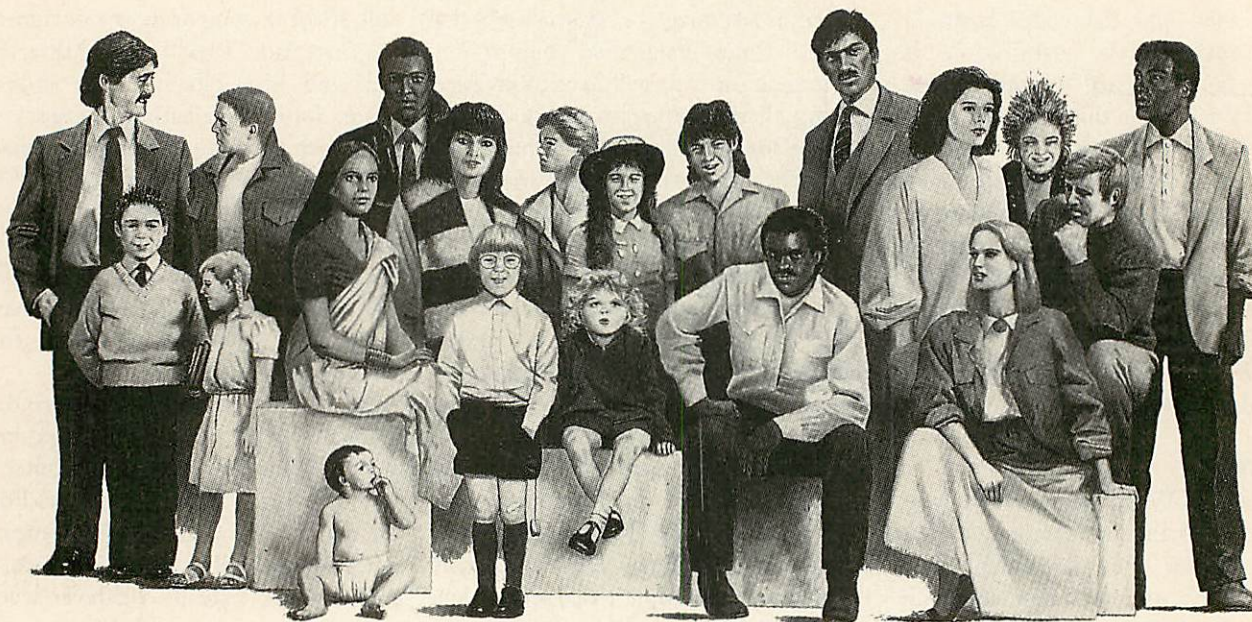
able effort in composing the document in the first place. *View 3* is now three years old, and it's unlikely to be upgraded again. So software authors are stuck with the screen handling of printer commands.

While I personally am content with *View*, if I had to achieve a variety of unusual effects in my printing I would probably export my text to a desktop publishing package. At least I'd have a better idea of what was going to go where on the paper.

If I had no other printer driver software, or if I was starting from scratch with *View* and a dot-matrix printer, I'd buy Watford Electronic's *View* Printer Driver ROM. It's robust, compatible with all my hardware and software, and can work at virtually whatever level of sophistication is demanded by the task to hand. Its virtue – dedication to *View* – is also its limitation. It's a lot of money to pay for something which works with no other wordprocessor, and which duplicates many of the functions provided in free or bundled software.

You wouldn't want to start with *Hyperdriver* as your only *View* printer driver. It may be that you can't appreciate just how clever *Hyperdriver* is until you experience the frustration of cajoling your printer to do something odd. It does make a super upgrade to Computer Concepts' now obsolete *Printmaster* ROM. *Hyperdriver* is more of a general purpose utility – which incidentally enhances *View*. It also enhances *Wordwise*, *Wordwise Plus*, *InterWord*, and probably any other program which sends output to the printer. If you want to improve printing generally, buy *Hyperdriver*.





YOUR CHOICE – THEIR FUTURE

If you purchase or specify education technology, the choices you make today will have a profound effect on the futures of pupils, students and trainees tomorrow.

Education technology has made inroads into every sphere of learning. From primary school to industry. So now's the time to do your homework and swot up at **BETT '89**.

The biggest, best, most exciting show of its kind – providing the perfect forum for in-depth discussions on

technology in education today.

It's your opportunity to meet over 140 leading manufacturers and suppliers under one roof, covering the complete spectrum of education technology.

It's a show in a class of its own. Featuring a comprehensive series of **FREE** seminars unique to **BETT '89** – places are limited so book now!

BETT '89. Be there for them, it's their future. Clip the coupon today!



JANUARY 18-21 1989
BARBICAN, LONDON

Sponsored by **beea** and

British Educational Equipment Association

Educational Computing Magazine.

NAME (MR/MS) _____
 JOB TITLE _____
 COMPANY/ESTABLISHMENT _____
 ADDRESS _____
 POSTCODE _____ TEL _____
 Further details required: ☐ Please send me _____ complimentary tickets
☐ Please send me details on the seminars.
 Return this coupon to: Elisabeth Coles, EMAP International Exhibitions
 Ltd, 12 Bedford Row, London WC1R 4DU. Telephone: 01-404 4844
 Complimentary 24hr ticket hotline: 0203 470075

AU/JAN/89

BUSINESS

THREE GOOD IDEAS

Roger Carus takes a look at some more suggestions for making practical use of the BBC micro

Starting the eighth of this series it seemed a good idea to look back and see who was coming up with all these good ideas for business applications for the BBC micro. So I looked at the 30 or so I have written about: there have been about as many more ideas suggested, but not written about, and 23 readers have asked for information about those which have been reported.

The ideas have come from all over the place, with four from Ireland and two coming from the Netherlands. To my surprise London and the home counties have produced less than their fair share and the Midlands quite a lot more than you'd expect.

The people writing are equally varied. There have been several teachers, particularly from higher education, but not nearly as many of them as I expected at the start, and there has been almost no shopkeepers who had originally seemed the most likely group.

Instead, I've heard from printers, auctioneers, bankers and debt collectors, plus several engineers and designers. Perhaps the greatest surprise is the number of contributions from people working in the arts as graphic artists and potters. About a quarter of those writing are retired and I am sorry to say that there have been only two women.

The type of ideas that have been produced almost always arise from the work the contributors are doing or from their leisure activities, and are mostly specialist applications. The most popular types seem to be concerned with textile design, and records of weather and personal finance. The range of applications is very wide and extends from fortune telling to yacht design!

Everyone is welcome to contribute suggestions and I acknowledge all ideas that I get, even though I cannot use every single one of them in the magazine. Some of the readers who write want my opinions about their work and that is much more difficult, as a lot of it is beyond me. Not many of those who

| ARMSTRONG NICOLA | | | | | |
|------------------|-------|-------|-------|-------|-------|
| Reserves: CS, DC | | | | | |
| HU | P | FN | B | G | CD |
| Gp. 1 | Gp. 2 | Gp. 3 | Gp. 4 | Gp. 5 | Gp. 6 |
| CP29 | B 50 | MU17 | P 61 | G 77 | SP15 |
| IH 0 | CS45 | FN35 | SO19 | CB 0 | C 19 |
| G 38 | BS12 | AD38 | UM19 | IH 0 | CD31 |
| F 33 | CD 0 | D 17 | HB17 | DC17 | AD29 |
| H 50 | S 35 | DR15 | IH 1 | TX14 | DR15 |
| HU10 | P 18 | PE38 | B 22 | CD17 | PE51 |
| XX 0 | XX 0 | XX 0 | XX 7 | XX 0 | XX 0 |

Screen from Alan Dean's school admin system

write are trying to make money out of their ideas, but a few have succeeded in doing just that.

The first report this month is from two men who have been very successful in marketing their work. Alan Dean from Nottinghamshire has written a comprehensive school administration system which his partner David Harding is helping to market. He has been so successful that it is now being used in about 150 schools. As David says, you do not need to have an IBM to produce the information that schools have to keep these days, and the BBC micro offers a much more economic solution. Their system sells at £160.

It is suitable for use in primary and secondary schools and is so complete that I could not find any type of listing that it did not have ready, but I must admit to having been away from real school administration for a long time.

If you are interested in learning more about it, get the specifications from David Harding, 837 Bridle Road, Burton Joyce, Notts NG14 5FS, or telephone him on (0602 31) 2180.

A completely different report came from John Kemp in Zambia a year ago, just before he returned to Kingston-upon-Thames. While in Africa he worked with the Christian Literature Press, a non-profit making organisation based in Zambia. Its main objective is printing Christian literature for use by missions there and in surrounding countries.

They introduced BBC model B com-

puters in 1984 to help with administration, particularly job-costing and invoicing, for which programs were specially written. This was very successful, but the original model B was stolen and in 1986 replaced by a Master 128k with dual disc drives and an Epson FX85 printer.

As well as the earlier programs, John wrote software to carry out payroll and cost analysis tasks, and a hard disc has since been added to cope with the customer database. This database will eventually contain information about all jobs done since 1972, when the Christian Literature Press was first founded. They have even more plans for future software developments.

The last story this month is from nearer home, in Scunthorpe, where Dr Gordhandas, a general practitioner, is making good use of a BBC B for his records at the Ashby Clinic. He keeps the usual patient register on an integrated program he has written which also has the facility to separate the modules. The suite has a capacity of 8000 records.

Dr Gordhandas has also converted the program for use on a Master with a hard disc. This downloads data to floppy discs, which gives him a convenient automatic back-up.

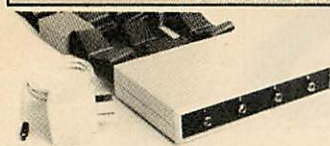
By way of relaxation, he has also written an integrated wages program so that all the quarterly information required by the Family Planning Clinic is ready and waiting!

Have you done something to add to the collection or would you like to get in touch with any of the people mentioned? If so, let me know.

IDEAS WANTED

If you use your micro for business or pleasure or have written a piece of useful software and would like to share your knowledge and experience, write to Roger Carus, c/o BBC Acorn User, Redwood Publishing, 20-26 Brunswick Place, London N1 6DJ, or via British Telecom Gold: 81RED001.

PRINTER SWITCH-BOXES

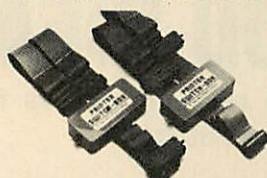


These high quality 3 and 4 way printer switch boxes are ideal for use in schools and colleges. The switch is extremely cost-effective, it will allow up to four micro's to share just one printer by simply pressing a button. Both versions come complete with all cables. The PS4 box has 2 x 3.7m + 2 x 1.7m + 0.4m to the printer, the PS3 has same but only 1 x 3.7m. Data buffers are fitted to the extra long 3.7m cables to give reliable data transfer.

PS3 3 BBCs to 1 Printer £59.50
PS4 4 BBCs to 1 Printer £69.50

These useful switch boxes are ideal for use in the office or at school. No need to keep swapping cables over just press the button! The cables supplied are 2 x 1.7m + 0.4m with appropriate connectors fitted. Both versions may be used with a plotter if required. Super value.

PS1 2 BBCs to 1 Printer .. £31.50
PS2 1 BBC to 2 Printers .. £31.50



CNC LATHE INTERFACE

Retrofit to your Lathe
SEND for...



CONNECT 121
CNC LATHE

USER MANUAL
...FREE Infopak

Successful and proven system for teaching CNC. Already in use in over 200 education establishments. Complete with disc software and comprehensive Manual. Only requires BBC B, B+ or Master set-up. ISO standard part-programming. Send for your FREE INFOPAK.

32K RAM MODULE

Store all your ROMs on disc, then load them into the RAM module as and when required. Plugs into just one sideways ROM slot giving two separate 16K banks. Complete with write switch, software on 40 or 80 track disc plus full documentation.

RM2 32K RAM module £19.95



TERRELL ELECTRONICS

7-B ESSEX GARDENS HORNCHURCH ESSEX RM11 3EH

PLEASE ADD 15% VAT TEL: 040 24 71426 POST & PACKING FREE

EDUCATIONAL AND GOVERNMENT ORDERS WELCOME * QUANTITY DISCOUNTS



Archimedes ART NOUVEAU

The New Art Package
by Barry Christie

256
COLOURS

ART NOUVEAU

A quality art package specially developed for use by the professional artist and the home enthusiast alike.

Art Nouveau is a versatile, easy to use menu-driven package which offers the user a choice of more than 100 different options including:

Facility to load Mode 12 and 15 screens from other packages
x16 Pixel Editor User defined screen grid
Cut, distort and paste Scratch pad
Etc

ONLY £42.50 including VAT and P&P

Order now on our 24-HOUR ACCESS CREDIT CARD HOTLINE on (0698) 733775 or send a cheque/postal order for £42.50 made payable to 'COMPUTER ASSISTED LEARNING LTD' at the address below.

Please send me _____ ART NOUVEAU Package(s) at £42.50 each

Name: _____

Address: _____

Postcode: _____

Payment is by cheque/P.O. No. _____

or Please debit my Access account card number _____

Card expiry date: _____

Signature: _____

COMPUTER ASSISTED LEARNING LTD (DEPT AU)
Strathclyde Business Centre
Princess Road
New Stevenson ML1 4JB



Please send S.A.E. for Further Details.

Access

SCHOOL AND GOVERNMENT ORDERS WELCOME

VISA

FREE

Deluxe 120 Disc capacity lockable Disc Box worth over £14. (Please state if you want the 100 capacity Box instead).

when you buy

25 disks DS/DD for £17.95
or 50 disks DS/DD for £26.95
or 100 disks DS/DD for £43.60

FREE CATALOGUE WITH EVERY ORDER

Nebulae, dept MH, FREEPOST, Kilroot
Park Industrial Estate, Carrickfergus,
Co Antrim, BT38 7BR Tel (09603) 51020
(Mon-Fri 9 to 5)

7 Day Delivery. One year guarantee & 14 day money back period. Prices inc. VAT + postage

All disks Japanese Higrade 5 1/4" 96 TPI come with envelopes and write protect tabs

Tel: (09603) 51020

FREEPOST YOUR ORDER TODAY - NO STAMP REQUIRED

TRADE IN YOUR BBC B AGAINST ANY MICRO OF YOUR CHOICE

We will offer £150 or more for any working BBC B against the following micros:

| | |
|----------------------|----------------|
| Acorn Master 128 | £454 |
| Acorn Archimedes | from £800 |
| Arati 520STFM | Superpack £399 |
| Atari 1040STFM | £499 |
| Commodore Amiga A500 | £399 |
| Amstrad PCW's from | £401.35 |
| Amstrad PC's from | £458.85 |

or any other popular micro
Retail shop open 6 days 9.30am-5.30pm

Portobello Trading Company
300-302 Portobello High Street,
Edinburgh EH15 2AS
Tel: 031 657 3941 (3 lines)



EUROWORD

for WORDWISE and WORDWISE PLUS

Converts Wordwise to a European Wordprocessor

- On-Screen Accents
- On-Screen Underlining
- Menu to Set Preferences
- Customise to Printer
- 40 Page Manual

Provides a minimum of 26 European Characters, all of which can be used in a single document.

Printer drivers for Epson, Citizen, Diablo/Qume, Juki, Ricoh and IBM mode printers.

Other useful features, such as additional embedded commands for Wordwise similar to those in Wordwise Plus.

Charm Micro Soft
31 Freshmeadow Lane, Helsby,
Cheshire WA6 0QU. Tel: 0772-616705

Price: £14.90 inclusive
Add £2 for a 3.5" disc
Specify 40/80T and printer type

See page 65
for
Superb Christmas
Subscription offer

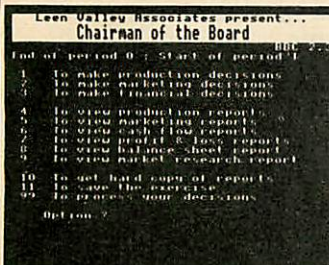
Beat
the price rise

LETTERS

BBC Acorn User, 20-26 Brunswick Place, London N1 6DJ. BTG/TNS 81:RED001

CHAIRMAN'S REPORT

Sir, In his November review of *Chairman of the Board*, Michael Leete makes two major criticisms. The first is that the exercise does not precisely mirror the operations of a real business. This is true, but the distortions deliberately enhance the learning process. The second is that a calculator is needed when using the exercise – this aspect is not an oversight. Planning outside the exercise (using a calculator or a spreadsheet) is an integral part of the learning process. The exercise is a surrogate for the real world, in which a calculator or spreadsheet would be used as a matter of course.



A real business operation?

Chairman of the Board sells for £39.95 and not the £60 that Mr Leete quotes. We do not believe any other package offers better value. For readers who would like to test this assertion for themselves, a demonstration copy of *Chairman of the Board* is available for £5.

Paul Finlay

Leen Valley Associates
36 Trevor Road
West Bridgford
Nottingham NG2 6FT

POLISH UP YOUR POLISH

Sir, It is probably quite rare that you receive letters from Eastern Europe. However, there are a number of people like myself in Poland who own Acorn computers. I am writing to tell you of a BBC User Group that we organised this summer in Warsaw. There are about fifteen people, mostly with Masters.

We rarely travel to England and are therefore limited to our small society. Any correspondence would be greatly appreciated to the following address:

Piotr Pagowski
ul Perzynskiego 13/70
01-855 Warsaw
Poland

I look forward to any letters or contact with BBC users visiting our country.

Piotr Pagowski
Warsaw

LEADING QUESTIONS

Sir, The company I work for produces both software and hardware for a range of eight-bit machines. Recently it has upgraded to a range of 16 and 32-bit machines including several Archimedes 310 computers.

Obtaining interfacing parts for the eight-bit and the other 16 and 32-bits was not a problem but it was for the Archimedes.

As there is no user port on the Archimedes we decided to

use the mouse port to register values for hardware such as trackballs and graphics tablets. However, all our enquiries could come up with was a DIN plug similar to the one on the end of the mouse cable on the Arc.

We would be grateful if you could help us in this area.

Sol Brown
Tearsoft



Trackerballs can enter mouseholes

In fact, a BBC-compatible user port is part of the Acorn I/O expansion card. We have no knowledge of where the 'mouse-sized' DIN plugs can be obtained (you might try one of the larger electronic components suppliers such as RS or Farnell). But Pineapple (39 Brownlea Gardens, Seven Kings, Ilford, Essex IG3 9NL) sells a lead that links a trackball through the Arc's mouse port.

READING FOR THE BAR

Sir, I am interested in building a bar code reader for a BBC Master computer. Despite not owning such a computer, I would like to make a bar code reader for my school.

I looked through my incomplete pile of *Acorn Users*, but to no avail. Could you please help me find a relevant article, as I am sure this has been done before. The Radio Spares bar code reader costs £200!

Matthew Shaw
Stroud

An article about bar code readers did appear in the December 1984 issue. This described the use of readers, plus the theory and practice of how they work. Details of the reader concerned can be obtained from PMF Datapoint, Noak Hill Rd, Noak Hill, Romford, Essex RM3 7LL; tel. (04023) 48956.

TERRIFIC TERRAMEX

Sir, The point I would like to make is that after reading your review of *Terraxex* in the November issue I went out and ordered it straight away because it really looked and sounded good.

After playing it for many sleepless nights I have come to the conclusion that the review of this game was an understatement (not being unkind to the reviewer). The game is brilliant, and I can definitely recommend it to anybody with an Archimedes. And I hope that many more software houses will recognise the potential that the Archimedes has to offer.

S Mansfield
Margate

FRC ELECTRONICS LTD

DISC DRIVE PROBLEMS?

Read/Write errors? Corrupted Data?

Perhaps it is time you had your disc drives checked.

FRC ELECTRONICS specialise in the alignment and repair of all makes and models of floppy disc drives (3 1/2", 5 1/4" and 8").

For a fast and efficient service at competitive prices call Reading (0734) 479550 or write to us at

52 Queensway, Caversham Park Village,
Reading, Berkshire. RG4 0SJ.

THE ACCOUNT BOOK

The Account Book does on a computer what most small businesses and clubs still do manually – your accounts, including VAT if you are VAT registered, but it does it far, far better and will probably make your book-keeping a pleasure and not a chore. In the 12 months since its launch we have received much praise and many letters of thanks and the following quote is typical, for which we thank Mr G Allcock of Southampton. "Without doubt the solution to my book-keeping problems. It is incredible value for money and its operation is simplicity itself" It costs just £27.95 (including free telephone helpline) and is suitable for the BBC B upwards. If you would like to order a copy or want a fact sheet please telephone us or use the coupon. The Account Book is available on disc and requires a mono or colour monitor and dot matrix printer. Latest version includes enhanced vat return.

NOW AVAILABLE IN ADFS FORMAT FOR THE MASTER AND 3.5 inch DISC FOR MASTER COMPACT.

SEE THE BEEBUG REVIEW VOL 7 NO 5.

Please tick: ☐ 5.25" disc ☐ 3.5" disc ☐ ADFS ☐ DFS
☐ 80 track (minimum 1 double sided drive)
☐ 40 track (minimum 2 single drives DFS only)

NAME:.....
ADDRESS:.....

POST CODE:..... TELEPHONE:.....

ACCESS CARD NO:.....

YOUR COMPUTER:.....

SIGNATURE.....

or send cheque for £27.95 to **Apricote Studios,**
2 Purls Bridge Farm, Manea, Cambs, PE15 0ND
or telephone 035 478 432 with your **ACCESS**
card number/enquiry. All orders sent by return
of post.



Reach For The Sky

with GLIDER PILOT 2, our comprehensive flight simulator. Features cable launch, thermals, cross country with map and practice option. Extensively machine coded for quick response. Instruction booklet.

With full instrumentation and "solid" colour perspective graphics, this is not a game but an accurate and challenging simulation. Keys or potentiometer joystick. Find the thermals and soar!!

Quality and realism ... "Glider pilots will love it." — Acorn user 1988.

FREE to disc users — "NOTEBOOK" — an easy to use memopad utility. Use it as a flight log for Glider Pilot 2!

B, B+ and master.

Cassette £7.95, 5.25" Disc £8.95, 3.5" Disc £9.95.

APEX Software, Station Road, Penshaw, Tyne & Wear
DH4 7PE. Tel: Durham 091-385 3091.

MASTER 512K Boards - now only £99

MONITORS
AMBER
HI-RES
only £59.95

LARGE RANGE
OF
ARCHIMEDES
SOFTWARE
IN STOCK

THE COMPUTER DEPOT
205 BUCHANAN STREET GLASGOW G1 2JZ
041-332 3944

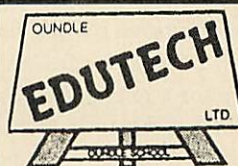


CSS COMPUTER CENTRE

Unit 3A,
Townfoot Industrial Estate, Brampton,
Cumbria CA8 1 SW
Educational, Home and Business
Systems
Acorn and SJ Research Authorised
Dealers
Network Specialists * Peripherals
☎ 06977 3779
Cumbria Software Systems Limited



Government, Plc and Education orders welcome



ROBITICS + Full Software Support
+ Comprehensive Manual
CONTROL BOARD:-
for only 99 pounds
inc VAT and P&P
For use with popular
BBC MICRO SERIES

The RCB1 is an inexpensive, versatile, robust, and powerful interface, controlled by BASIC or MACHINE CODE ROUTINE (supplied).

FEATURES INCLUDE: NO SOLDERING!

Promotional
Video on
Request

- 8 ADJUSTABLE DIGITAL INPUTS
- 4 ANALOGUE INPUTS
- 8 PUSH/PULL POWER TRANSISTOR OUTPUTS
- 2 INTERRUPT DRIVEN COUNTERS WITH DEBOUNCING FACILITIES

EXPANSION BOARDS also available to double functions. LOGIC BOARDS with 2 NOT gates, 1 AND gate, and 1 OR gate, at ONLY £17.00.

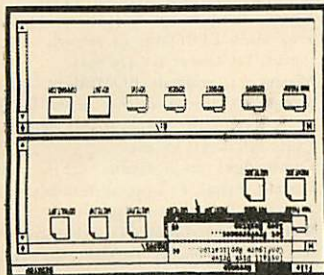
For further details, write to: The Sales Manager, Oundle Edutech Ltd, Oundle School, Oundle, Peterborough PE8 4EN.

GRAPHIC DESIGNS

Sir, I run a bench of four unexpanded BBC Bs at our school.

One of the most useful ROMs is *Pendown* by Logotron, but it has no graphics capability. Can you suggest a program or ROM that would give me that capability without interfering with the *Pendown* ROM.

Christopher Price
Merton Court School, Sidcup



Pendown: useful ROM in schools

Almost any graphics ROM, such as AMX *SuperArt* or Watford's *Quest Paint*, can be used to produce graphics. Both are quite easy to use, and are suitable for most older schoolchildren. Younger students can be introduced to BBC Soft's *Picture Craft* or *Image* by Cambridge University Press, or Acorn User's own *Kiddie Art* (January 1987 issue - back issues can be ordered using the order form on page 115).

CIRCUIT TRAINING

Sir, In September's *Acorn User*, Andy McLements was requesting information or circuit diagrams for 6502 controller cards.

A suitable diagram for a 6502 controller was published in *Electronics and Wireless World* in December 1984, by Peter

Nicholls. Machine code for the controller can be developed on a BBC micro, and programmed into EPROM for use in the controller.

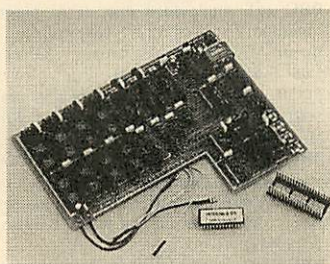
C Parkinson
Avon

MOVING SIDEWAYS

Sir, I own a BBC B. I now want to upgrade it to a 64k or 128k machine with sideways RAM, and also to add more ROM space. Could you please tell me which board I should get as it is starting to drive me mad reading all these articles, trying to decide which one would be best!!!

A R Evans
Wrexham

There are a number of boards available, although one in particular might suit your needs; the *Integra-B* from Computech could be



Computech's Integra-B board

ideal for your purposes. The board is meant to emulate a Master 128 in that it has 64k sideways RAM, 12k private RAM and 20k shadow RAM. It also has a real-time clock and eight free ROM sockets. It costs £130 from Computech (The Garth, Hampsfell Road, Grange over Sands, Cumbria, LA11 6BG); expensive, but good value if you don't already have shadow RAM or a ROM board. The board was reviewed in the July 1988 issue of *Acorn User*.

SERVICE WITH A SMILE

Sir, I recently had my *DOS Plus* boot disc modified by Programmable Systems Design to provide the numeric keypad facility which enables the BBC B to access the IBM keys necessary for certain software applications.

When trying out the modified disc, I encountered some difficulty in making a back-up copy and rang PSD for their advice. My call was taken by Ken Fullbrook who rang me back later that evening to discuss the situation. Although it was quickly established that the fault was not caused by his modification, he spent over half an hour on the phone establishing exactly what was wrong.

To meet this courtesy and consideration following such a modest financial outlay is worthy of mention and commendation and I would like your readers to be aware of it.

Rex Conway
Carmarthen

MASTERING SOFTWARE

Sir, Inspired by the recent price fall of the Master 512 board I rushed around the M25 to Watford Electronics and paid my money. Once home, I had no difficulty in installing the board and getting started.

So far I have found that most of the software I've tried has worked, but for every program that doesn't there are a number that will. So why worry? Cost — well, yes there is that, but public domain or shareware software allows you to 'try before you buy', for only the cost of the disc — between £1.50 and £5. Up to

now, I've not made a dud purchase. Some of the keys need to be sorted out as the Master doesn't always have those mentioned or the combinations don't work, but I find with a bit of time and effort, you can usually find one that does. For example, Mr Campbell (Letters, December 1988) mentions *PC File* won't function without f10 but I've found that in *PC Type+*, a shareware wordprocessor, fo



GEM is great for copying discs

works fine for f10. As *PC Type+* is compatible with *PC File*, I would expect the same to happen.

The software I've tested which appears to work, without problem or with only a few key changes, are:

PC Type+ — Wordprocessor
Flodraw — Flowcharting program

Supercalc 3.1 — Popular spreadsheet

AsEasyAs — A Lotus 123 clone

Reflex — A database

Delta — A database

Printshop — Design letterheads

Chess88 — Chess program

By the way, GEM is a great method for copying PC discs from their original format to the 512 800k or 640k. Place the 360k disc in one drive and a formatted 800k or 640k disc in the other, point and click. As this leaves lots of spare space, you could create a directory to hold your datafiles or, by copying folders, make a disc set into one.

Ann Terry
Godstone

ACORN USER ADVERTISEMENT PAGES - JANUARY 1989

| | | | |
|--------------------------|---------------|----------------------------|-------------|
| 4-Mation | 132 | Martelec | 138 |
| A&G Electronics | 78 | Maynard Intl (Godax) | 130 |
| Ace Computing | 124 | Meadow Computers | 94 |
| Advanced Memory Systems | 22 | Mercury Games | 25 |
| Al-Systems | 30 | Mewsoft | 118 |
| Alan Dean Software | 124 | Micro Media Computer | |
| Alpha Microtec | 132 | Supplies | 134 |
| AMS Group | 88 | Micro Peripherals | 19 |
| AMT Electronics | 79 | Microaid | 124 |
| Apex Software | 148 | Microman Computers | 68 |
| Apricote Studios | 148 | Mijas Software | 120 |
| Atari | 28-29 | Minerva Systems | IBC, 135 |
| AUCBE | 138 | Morley Electronics | 42-43 |
| Avon Computer Exchange | 33 | Nebulae Software | 146 |
| B+S Computing | 31 | Nidd Valley Micro Products | 17 |
| BBD Computer Dustcovers | 70 | Norwich Computer Services | 139 |
| Beebug | 6, 8, 13, 120 | Oak Computers | 17 |
| Bett Show | 144 | Oundle Edutech | 148 |
| Cambridge Micro Systems | 88 | Overseas Media | |
| Care Electronics | 84 | Distributors | 136 |
| CCE Catsoft | 25 | P&H Electronics | 140 |
| Charm Microsoft | 146 | Pearltree Dram | 20-21 |
| Clares | 14, 82 | PMS | 84 |
| Colton Software | 2 | Portobello Trading | |
| Compshop | 27 | Company | 146 |
| Computech | 25 | PRES | 4-5 |
| Computer Assisted | | RW Electronics | 124 |
| Learning | 146 | Rotherham Computer | |
| Computer Concepts | | Centre | 30 |
| | 122-123, 126 | Shibumi Software | 16 |
| Contex Computing | 118 | Silicon Vision | 72 |
| CSS | 148 | Simtron | 78 |
| Dabs Press | 32, 92, 117 | Soft Option | 30 |
| Datastore | 78 | Software Bargains | 1 |
| Electro Music Research | 94 | Squirrelsoft | 17 |
| Fairhurst Computers | 16 | Star Devices | 132 |
| FRC Electronics | 148 | Superior Software | IFC, OBC, |
| Ground Control | 70 | | 90, 96, 128 |
| Home Based Business | 151 | System Applied Technology | 132 |
| HSV Computer Services | 70 | Technolog | 120 |
| Human Computer Interface | 46 | Technomatic | 34-39 |
| Impact Posters | 119, 121 | Terrell Electronics | 146 |
| Integrex | 95 | The Computer Depot | 148 |
| Intelligent Interfaces | 78 | Towerhill Computer | 26 |
| Karir International | 151 | Twillstar Computers | 74 |
| Kendal Computers | 151 | Unique Solution | 16 |
| Keyzone | 118 | VMS | 136 |
| LCL | 118 | Watford Electronics | 49-64 |
| M-Tec | 88 | We-Serve | 140 |
| MD Office Supplies | 94 | Wight Scientific | 151 |
| Manor Court Supplies | 80 | ZUSO | 16 |

MAKE YOUR MICRO EARN!

Yes making money becomes incidental when you know how. Your micro is, if only you knew it, a gold mine. The size and make is irrelevant. Make the initial effort **NOW** by starting your own **HOME BASED BUSINESS**.

This may be the most important move you will ever make!

REMEMBER: You'll never get rich by digging someone else's "ditch". Anyone in the country, including **YOU**, can become very rich in a relatively short period of time just by doing a few basic things! It's more rewarding than playing games. The benefits are many and varied. Full or part time. For **FREE** details send S.A.E. to:



HOME BASED BUSINESS

**31 Pilton Place, Dept AU17
King and Queen Street
Walworth, London SE17 1DR**

Dealers for Amstrad, Acorn and Cambridge Computers

Amstrad
PC1640 Complete System £899.00
PC1640 Double Colour System £739.00
PC2086 from £599.00
PC2286 from £999.00

Commodore
PC10 III DD ECD £899.00
PC20 III 20mb HD ECD £1199.00

Acorn
Archimedes 305 Colour System £819.00
Archimedes 310M Colour System £999.00
Master 128K £330.00
Master Compact Entry System £312.00
Others call VALUE FOR MONEY DEALS

Printers
Epson LX800 £209.00
Epson FX 850 £345.00
Brother K6256 - 160cps £207.00
Taxan KP815 £204.00
Panasonic P1082 £189.00
Canon PW1080AI £284.00
Juki 6200 £375.00
All other popular makes CALL

Multi-port Data switches 2 way £29.95
Multi-port Data switches 4 way £49.95
IBM Printer Cables from £39.95
Centronics to Centronics £14.95

SPECIAL DISCOUNTS ON LARGE QUANTITY
ASK FOR OUR MONTHLY NEWSLETTER & SAVE MONEY

All Disketts - Nashua, Maxell, Memorex, TDK, Dysan etc. - Best offers
All Ribbons - Unbeatable Prices - Guarantee refunds if overcharged
Other items: Scientific instruments, Upgrades, AII Accessories etc.

Help Lines: 01 440 0803 or 636 6614

(Callers by arrangement only)

KARIR INTERNATIONAL LTD
17 Bishops Close, Mays Lane,
Barnet EN5 2QH

Trade and export enquiries most welcomed.
Telex: 8951182
Fax: 01 441 6813

SIGNWRITER!

Quality lettering any size

£29.95 (BBC, some Electrons) **£49.95** (Archimedes)

Many extra fonts (£5.75 each), e.g. :

IDECO  **Corn**

WIGHT SCIENTIFIC (01) 858 2699
Dept. AU, 44 Roan Street, London SE10 9JT

Also: PAPERBASE for bibliographies COLOURED RIBBONS
LABELWRITER for multiple labels



KENDAL COMPUTER CENTRE

0% finance on all Arc systems over 12 months

Full after sales dept.

Mail order repair

Authorised dealer

Systems on demo

Free advice

0539 22559

KENDAL COMPUTER CENTRE
68 STRAMONGATE
KENDAL, CUMBRIA
LA9 4BD



ACORN USER'S

DIARY

Tabletop terminology

With all this talk of future computing around, some ideas escaped the brain cells of the BAU team. TQ's favourite was the holographic keyboard for your portable, which would, of course, roll up to fit in a pocket.

And what about the new terminology? All these home-workers will have 'tabletop' computers, rather than desktops. When speech processors come out we'll have 'mouthware' and syntax checkers called 'mouthwash'.

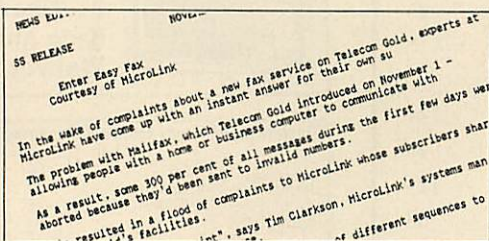
Vision systems will add a new dimension to computer specs, with eyeballs replacing the tracker version. And last but not least, the day someone invents a smart input device that decides to run away we really will need mouse traps!

Bell wins ding-dong

Graham Bell and Mark 'Army' Webbing came out tops in the CDS *Tank Attack* contest at the game's launch – it's due soon on the Beeb. They trounced the duo led by one of the game's authors, but then he was severely hampered by Dumbo Darrin from *A&B Nincomputing*.

Bell (whose leadership style many people liken to General Patton) commented: 'At last my years of training as a paleo-ecologist have paid off.'

And the launch led to Big Ed Quinn winning his domestic Chocolate Wars. Better half Linda had been inundated by pressies from Citizen – chocolate coins. But the National Army Museum's chocolate medal was four times the size! Thanks to CDS software for the press pack: the 'knapsack problem' is a hoary one in computer circles – but his knapsack was smaller than usual.



The fear of software dying

Phillip Lewis of the DES came up with the best quote of the month at Resource's education conference: 'I don't appear to have satisfied a lot of people.'

And at the same meeting, Mike Matson, the creative brain behind most of 4Mation's educational output, told the parable of the desert island. Unfortunately, it wasn't a happy tale, the gist of it being that there wouldn't be any discs around as far as educational software was concerned if the DES and DTI

didn't sort themselves out.

His views on the DTI's software subsidy were mainly unprintable, and delegates were left wondering where the logic was in not being able to spend any of the money on 8-bit software.

Schools can use the money to buy a 16-bit Nimbus version of the four-year-old *Granny's Garden*, but not the 'state of the art' *Worlds Without Words*, because it only runs on an 8-bit BBC.

Teletext star

'The Beeb's a star of the high-tech Museum of the Moving Image in London. While a PC handles the video discs, a

Fax of life

We really wanted to do a news story about the new Easy Fax system on Uncle Derek's email service Microlink, but we couldn't read the fax! It doesn't seem able to write three lines in a row (see left).

Master runs the teletext display of the top 100 TV programmes.

And Beebs were in action again in *First Born*, teaching Gor – the one with an ape for a mother – to speak. Come to think of it, we know some PR men who could do with a go on one.

Congrats...

Acorn's tenth birthday coincides with Bruce and Tessie Smith's wedding anniversary (congrats). And Dave Clare got married on November 17 (more congrats). No-one rated the idea of his honeymoon spent at Acorn.

New number?

Expect a number change on the Arc any day now. Acorn supposedly renamed Arthur 2 as RISC OS because of the Dudley Moore film of the same name. We hate to tell you: Volvo has released a 440.

Designer den

Acorn User has moved offices again – for the fourth time in six years. Fortunately, we didn't go far, just into the Redwood Dungeon. So if there are any mistakes in this issue, they're down to the damp, dark, airless conditions.

But in these trendy days, and with the new name *BBC Acorn User*, we thought we'd come up with a designer label for the new den: BAUHouse.



MINERVA SOFTWARE
FOR THE

Archimedes

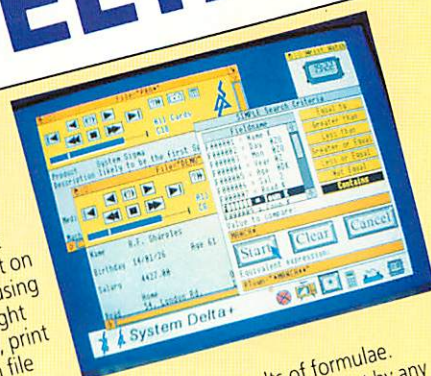
£69.95
EACH

SYSTEM DELTA

System Delta is the most comprehensive database available yet. It's so simple to operate that it has already become the standard in educational fields. It is very professional and pleasing in its presentation, making full use of the genuine Archimedes WIMP environment. It can handle vast amounts of data in the office, school or home, with its capacity of 2.14 billion records and 16 million fields. Its multiple 'key fields' allow any record to be found in 1 sec. even in a file of 20,000 records.

It maximises on the Archimedes' speed and has unique multi-tasking allowing an operation to continue on one file whilst performing a search or print on another. Easy file creation using free format screens with eight data types. Multiple display, print and report formats with each file including a user defined label facility.

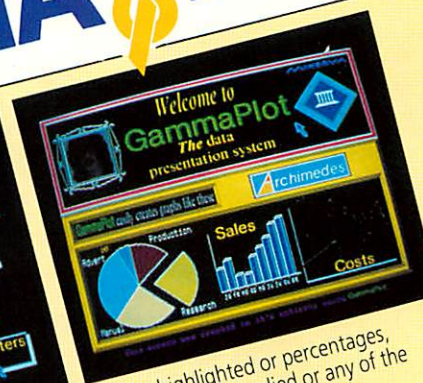
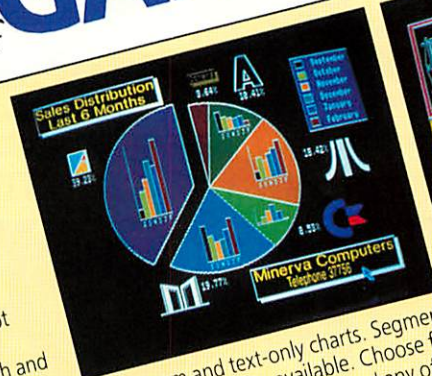
Three methods of search from simple option selection to in-depth multiple criteria. Comprehensive maths facilities allow results to be placed in other fields. Fast sort by any criteria on any number of fields. Transfer fields from one database to another. Imports data from other databases, exports data to Gamma and Sigma. Absolutely no programming required - but if you wish to program we provide a full set of commands for you.



GAMMA PLOT

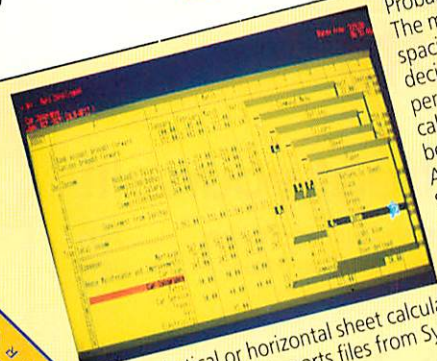
Seeing is believing! GammaPlot is an extensive chart/graph plotting program with a full art package included. It allows even a novice to produce stunning charts and drawings on one screen. Several charts may be placed on one sheet, in any position with text or drawings to make the data easily understood.

GammaPlot supports six main graph and chart types of line, scatter, pie, histogram and text-only charts. Segments may be highlighted or percentages, values and labels switched on. Statistics are also available. Choose from the text styles supplied or any of the native Archimedes 'pretty fonts' or even define your own, and any of these can be enlarged or reduced. Various shapes, patterns and borders are supplied with a full 256 colour range. Full zoom facility. Print facilities include colour output. Data entry is via the keyboard or any Delta, Gamma or Sigma file.



SIGMA SHEET

Probably the largest and fastest spreadsheet on any small business micro! The massive sheet size is 1000 columns by 16000 rows. Definable colours, spacing, and widths. Various cell formats including justification, up to 17 decimal places, preceding currency sign, bracketed or coloured negatives, percentage, exponential. Select to display the formulae instead of calculated sheet for really fast and easy sheet set up. Cell references may be alphanumeric or by label for ease of use, eg. A2 or "Jan sales". Automatic relative or absolute reference adjustment while replicating. Simple yet extensive maths allowing calculations based upon references to other cells. Over 30 maths/statistical functions including SUM, AVG, COUNT, MAX, SIN, LOG, SQRT, etc. Full date and time handling. Makes use of Maths co-processor, if fitted. Vertical or horizontal sheet calculation or intelligent mode which always gets it right no matter how the sheet is set up. Imports files from System Delta and most spreadsheets. Exports data to Gamma Range.



PLUS ACCOUNTS, GAMES & SPECIALIST SOFTWARE FOR ARCHIMEDES AND FULL RANGE OF SOFTWARE FOR THE BBC MICRO



MINERVA SOFTWARE

69 SIDWELL STREET . EXETER EX4 6PH . TELEPHONE EXETER (0392) 437756

THE MAGNIFICENT 7

SUPERIOR

PLAY IT AGAIN SAM 3



BBC Micro/Electron
Cassette
\$9.95

FOUR HIT GAMES - Commando, Palace of Magic, Killer Gorilla, Killer Gorilla 2

SOFTWARE

PLAY IT AGAIN SAM 4



BBC Micro/Electron
Cassette
\$9.95

Frak!, Spellbinder, Cosmic Camouflage, Grand Prix Construction Set (BBC Micro), Guardian (Electron)

PRESENTS A

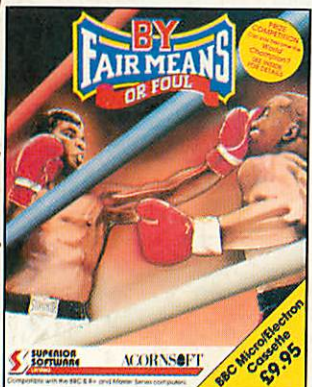
PLAY IT AGAIN SAM 5



BBC Micro/Electron
Cassette
\$9.95

FOUR CLASSIC GAMES - Imogen, Elvir, Bug Blaster, Fortress (BBC Micro), Moonrider (Electron)

MAGNIFICENT



BBC Micro/Electron
Cassette
\$9.95

A realistic boxing simulation. You can even cheat... if the ref's not looking. Exciting and great fun!

CHRISTMAS



BBC Micro/Electron
Cassette
\$9.95

A massive arcade adventure through pipeline complexes, with powerful games designer.

GAMES



BBC Micro/Electron
Cassette
\$12.95

"Exile is even more enjoyable to play than Elite or Zarch." Dare you enter the World of Exile?

Christmas Gifts

For someone else...

or treat yourself!

Play It Again Sam 3
Play It Again Sam 4
Play It Again Sam 5
By Fair Means or Foul
Pipeline

BBC Micro Cassette.....\$9.95

BBC Micro 5 1/4" Disc.....\$11.95

Acorn Electron Cassette.....\$9.95

BBC Master Compact 3 1/2" Disc.....\$14.95

Exile
Repton Infinity

BBC Micro Cassette\$12.95

BBC Micro 5 1/4" Disc.....\$14.95

Acorn Electron Cassette\$12.95

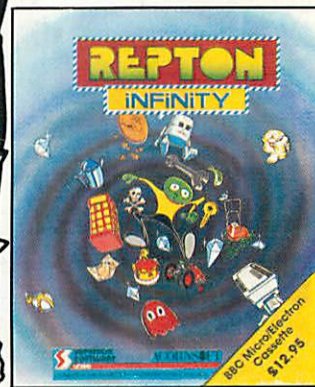
BBC Master Compact 3 1/2" Disc...\$19.95

SUPERIOR SOFTWARE
Limited

ACORNSOFT

Superior Software Ltd., Dept M5, Regent House, Skinner Lane, Leeds LS7 1AX. Tel: (0532) 459453
(Acornsoft is a registered trademark of Acorn Computers Ltd. Superior Software Ltd is a registered user.)

SELECTION



BBC Micro/Electron
Cassette
\$12.95

The Ultimate Repton - four puzzling new games and a complete games designer.